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# *Transactions of the American Gynecological Society for the Year ...*

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"Wie das Geſtirn,
Ohne Haſt
Aber ohne Raſt,
Drehe ſich jeder
Um die eigene Laſt."

GOETHE.

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# TRANSACTIONS OF THE AMERICAN GYNECOLOGICAL SOCIETY.

## VOLUME 20.

## FOR THE YEAR 1895.

PHILADELPHIA:
WM. J. DORNAN, PRINTER.
1895.

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# NOTE.

THE Society does not hold itself responsible for the views enunciated in the papers read at its meetings.

HENRY CLARK COE, M.D., *Secretary*,
27 EAST SIXTY-FOURTH STREET, NEW YORK.

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OFFICERS AND FELLOWS

OF THE

# AMERICAN GYNECOLOGICAL SOCIETY,

1895.

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## OFFICERS FOR 1895-1896.

PRESIDENT.

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# HONORARY FELLOWS.

* Deceased.

ELECTED

1877. *JOHN L. ATLEE, M.D., Lancaster, Pa.
1884. GEORGE GRANVILLE BANTOCK, M.D., London, England.
1876. ROBERT BARNES, M.D., London, England.
1892. *ROBERT BATTEY, M.D., Rome, Georgia.
1878. JOHN S. BILLINGS, M.D., LL.D., U. S. Army, Washington.
1890. *HENRY F. CAMPBELL, A.M., M.D., Augusta, Georgia.
1889. M. CHARPENTIER, M.D., Paris, France.
1893. CHARLES J. CULLINGWORTH, M.D., London, England.
1877. *JOHN C. DALTON, M.D., New York.
1878. J. AMEDÉE DOLÉRIS, M.D., Paris, France.
1878. *J. MATTHEWS DUNCAN, M.D., London, England.
1888. *ALEXANDER DUNLAP, M.D., Springfield, Ohio.
1876. *JOSEPH A. EVE, M.D., Augusta, Georgia.
1889. ROBERT P. HARRIS, M.D., Philadelphia.
1888. *GRAILY HEWITT, M.D., London, England.
1881. J. BRAXTON HICKS, M.D., London, England.
1895. CHARLES JACOBS, M.D., Brussels, Belgium.
1876. THOMAS KEITH, M.D., London, England.
1888. *GILMAN KIMBALL, M.D., Lowell, Massachusetts.
1891. CHRISTIAN G. LEOPOLD, M.D., Dresden, Germany.
1888. AUGUST MARTIN, M.D., Berlin, Germany.
1876. *ALFRED H. M'CLINTOCK, M.D., Dublin, Ireland.
1892. OTTAVIO MORISANI, M.D., Naples, Italy.
1888. *EMIL NOEGGERATH, M.D., Wiesbaden, Germany.
1891. ROBERT OLSHAUSEN, M.D., Berlin, Germany.
1877. CHARLES PAJOT, M.D., Paris, France.
1885. W. S. PLAYFAIR, M.D., London, England.
1891. SAMUEL POZZI, M.D., Paris, France.
1888. SIR WILLIAM O. PRIESTLEY, M.D., LL.D., London, England
1876. *CARL SCHROEDER, M.D., Berlin, Germany.
1876. *GUSTAV SIMON, M.D., Heidelberg, Germany.
1888. ALEXANDER R. SIMPSON, M.D., Edinburgh, Scotland.
1888. *D. HUMPHREYS STORER, M.D., Boston.
1882. LAWSON TAIT, ESQ., Birmingham, England.
1881. S. TARNIER, M.D., Paris, France.
1888. *ISAAC E. TAYLOR, M.D., New York.
1893. T. GAILLARD THOMAS, M.D., New York.
1882. J. KNOWSLEY THORNTON, ESQ., London, England.
1886. SIR T. SPENCER WELLS, Bart., London, England.
1881. F. WINCKEL, M.D., Munich, Germany.
1876. *MARMADUKE B. WRIGHT, M.D., Cincinnati.

Total, twenty-five Honorary Fellows.

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# FELLOWS.

* Denotes Fellows who are deceased.
† Denotes Fellows who have resigned.

1888.—Ashby, Thomas A., M.D. Professor of Diseases of Women, Baltimore Medical College; Professor of Obstetrics and Clinical Gynecology, Woman's Medical College of Baltimore; Consulting Gynecologist to Home for Incurables; Obstetrician and Gynecologist to Good Samaritan Hospital; Gynecologist to Maryland General Hospital; President of Medical and Chirurgical Society of Maryland. 1125 Madison Avenue, Baltimore.

1895.—Ashton, William Easterly, M.D. Professor of Gynecology, Medico-Chirurgical College of Philadelphia; Gynecologist to Medico-Chirurgical and Philadelphia Hospitals. 2011 Walnut Street, Philadelphia.

1886.—Baer, B. F., M.D. Ex-President of Philadelphia Obstetrical Society; Professor of Gynecology, Philadelphia Polyclinic. *Council*, 1894–'95. 2010 Chestnut Street, Philadelphia.

1882.—Baker, William H., M.D. Formerly Professor of Gynecology, Harvard University; Surgeon to the Free Hospital for Women. *Council*, 1886, 1890. *Vice-President*, 1891, 1893. 22 Mount Vernon Street, Boston.

1889.—Baldy, J. Montgomery, M.D. Professor of Gynecology, Philadelphia Polyclinic; Surgeon to the Gynecean Hospital; Gynecologist to the Pennsylvania Hospital. *Treasurer*, 1894–'96. 1722 Chestnut Street, Philadelphia.

*Founder.*—*Barker, Fordyce, M.D., LL.D. 1891.

1875.—†Bixby, George H., M.D. 1889.

1888.—Boldt, Hermann J., M.D. Gynecologist to the German Poliklinik; Gynecologist to St. Mark's Hospital; Consulting Gynecologist to the Beth Israel Hospital; Professor of Diseases of Women, New York Post-Graduate School and Hos-

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pital; Fellow of the British and International Gynecological Societies. 54 West Fifty-first Street, New York.

1878.—†Bozeman, Nathan, M.D. 1886.

1881.—Browne, B. Bernard, M.D. Professor of Diseases of Women and Clinical Midwifery, Woman's Medical College of Baltimore; Gynecologist to the Good Samaritan Hospital. *Council*, 1885–'93. 1218 Madison Avenue, Baltimore.

*Founder.*—*Buckingham, Charles E., M.D. 1877.

1894.—Buckmaster, Augustus H., M.D. Professor of Gynecology and Obstetrics, University of Virginia. Charlottesville, Virginia.

*Founder.*—†Busey, Samuel C., M.D., LL.D. 1895.

1889.—Byford, Henry T., M.D. Professor of Gynecology, College of Physicians and Surgeons of Chicago; Professor of Clinical Gynecology, Woman's Medical College of Chicago; Professor of Gynecology, Chicago Post-Graduate Medical School; Gynecologist to St. Luke's Hospital; Surgeon to the Woman's Hospital of Chicago. Venetian Building, 34 Washington Street, Chicago.

*Founder.*—*Byford, William H., M.D., LL.D. 1890.

*Founder.*—Byrne, John, M.D., M.R.C.S.E. Formerly Clinical Professor of Uterine Surgery, Long Island College Hospital; Surgeon-in-Chief to St. Mary's Hospital for Diseases of Women. *Council*, 1879, 1883. *President*, 1892. 314 Clinton Street, Brooklyn.

*Founder.*—Chadwick, James R., A.M., M.D. Formerly Clinical Instructor in Gynecology, Harvard University. *Secretary*, 1876–'82. *Vice-President*, 1883, 1888. *Council*, 1892, 1893. 270 Clarendon Street, Boston.

1889.—Cleveland, Clement, A.M., M.D. Surgeon to the Woman's Hospital in the State of New York; Consulting Gynecologist to the New York Cancer Hospital; Gynecologist to St. Vincent's Hospital. *Council*, 1893–'94. *Vice-President*, 1895. 59 West Thirty-eighth Street, New York.

1888.—Coe, Henry C., A.M., M.D., M.R.C.S. Gynecologist to the New York Cancer Hospital; Assistant Surgeon to the Woman's Hospital; Obstetric Surgeon to the New York Maternity Hospital; Consulting Gynecologist to the Manhattan Hos-

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pital; Professor of Gynecology, New York Polyclinic. *Secretary*, 1891–'96. 27 East Sixty-fourth Street, New York.

1888.—*Coleman, John Scott, M.D. 1892.

1889.—Currier, Andrew F., A.B., M.D. Lecturer on Gynecology, Post-Graduate Medical School; Assistant Surgeon to the Skin and Cancer Hospital; Attending Gynecologist to Bellevue Hospital, Out-patient Department. 138 Madison Avenue, New York.

1893.—Cushing, Ernest W., A.B., M.D. Surgeon to Woman's Charity Club Hospital. 168 Newbury Street, Boston.

1889.—Davenport, Francis H., A.B., M.D. Assistant Professor of Gynecology, Harvard University; Assistant Surgeon to the Free Hospital for Women; Physician to the Department of Diseases of Women, Boston Dispensary. *Council*, 1891. 372 Marlborough Street, Boston.

1891.—Davis, Edward P., A.M., M.D. Clinical Professor of Obstetrics, Jefferson Medical College; Professor of Obstetrics and Diseases of Infancy, Philadelphia Polyclinic; Clinical Professor of Pædiatrics, Woman's Medical College; Visiting Obstetrician to Philadelphia Hospital; Attending Physician to Children's Department, Howard Hospital. *Council*, 1896. 250 South Twenty-first Street, Philadelphia.

1892.—Dickinson, Robert L., M.D. Lecturer on Obstetrics, Long Island College Hospital; Obstetrician to the Long Island College Hospital; Obstetrician to the Kings County Hospital. 145 Clinton Street, Brooklyn.

*Founder.*—Drysdale, Thomas M., A.M., M.D. *Council*, 1886. 1531 Arch Street, Philadelphia.

1888.—Dudley, A. Palmer, M.D. Professor of Diseases of Women, New York Post-Graduate School and Hospital; Gynecologist to Harlem Hospital. *Council*, 1893. 678 Madison Avenue, New York.

1886.—Dudley, Emilius Clark, A.B., M.D. Professor of Gynecology, Chicago Medical College; Fellow of the British Gynecological Society. *Council*, 1891, 1893. 1619 Indiana Avenue, Chicago.

1879.—Duer, Edward L., M.D. Lecturer on Diseases of Women and Children at the Philadelphia Hospital; Gyne-



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cologist to the Presbyterian Hospital. 1604 Locust Street, Philadelphia.

1891.—EDEBOHLS, GEORGE M., A.M., M.D. Professor of Diseases of Women, New York Post-Graduate School and Hospital; Gynecologist to St. Francis's Hospital. *Council*, 1896. 198 Second Avenue, New York.

1893.—EDGAR, JAMES CLIFTON, Ph.B., A.M., M.D. Adjunct Professor of Obstetrics, Medical Department of the University of New York; Obstetric Surgeon to the New York Maternity Hospital; Obstetrician to the Emergency Lying-in Hospital; Attending Physician to the New York Lying-in Hospital. 54 East Thirty-fourth Street, New York.

1887.—EMMET, BACHE McE., M.D. Professor of Gynecology, New York Post-Graduate Medical School; Surgeon to the Woman's Hospital in the State of New York. *Vice-President*, 1893–'94. 18 East Thirtieth Street, New York.

1895.—EMMET, JOHN DUNCAN, M.D. Assistant Surgeon to the Woman's Hospital in the State of New York. 91 Madison Avenue, New York.

*Founder.*—EMMET, THOMAS ADDIS, M.D., LL.D. Surgeon to the Woman's Hospital in the State of New York; Consulting Physician to the Roosevelt Hospital, to the New York Cancer Hospital, and to the New York Foundling Asylum. *Council*, 1878–'79. *President*, 1882. 93 Madison Avenue, New York.

*Founder.*—ENGELMANN, GEORGE J., A.M., M.D. Master in Obstetrics, Vienna; formerly Professor of Diseases of Women and Operative Midwifery, Missouri Medical College and Post-Graduate School, St. Louis; President of Southern Surgical and Gynecological Society, 1890. *Council*, 1879–'82. *Vice-President*, 1885, 1895. 336 Beacon Street, Boston, Mass.

1890.—ETHERIDGE, JAMES H., A.M., M.D. Professor of Therapeutics and Medical Jurisprudence, Rush Medical College; Gynecologist to the Presbyterian Hospital and Central Free Dispensary; Physician to St. Luke's Hospital; President of the Chicago Medical Society. *Council*, 1894–'95. *Vice-President*, 1896. 1634 Michigan Avenue, Chicago.

1889.—FORD, WILLIS E., A.M., M.D. Medical Director, St. Luke's Hospital; Professor of Electro-Therapeutics, University

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of Buffalo; Lecturer on Electro-Therapeutics, Medical Department, University of the City of New York. *Council*, 1893. 266 Genesee Street, Utica, New York.

1881.—†FOSTER, FRANK P., M.D. 1895.

1890.—FRY, HENRY D., M.D. Professor of Obstetrics, Medical Department of Georgetown University. 1133 Fourteenth Street, N. W., Washington.

1877.—GARRIGUES, HENRY J., A.M., M.D. Professor of Obstetrics, New York Post-Graduate Medical School and Hospital; Consulting Obstetric Surgeon to the New York Maternity Hospital; Gynecologist to St. Mark's Hospital; Gynecologist to the German Dispensary. *Council*, 1882. 716 Lexington Avenue, New York.

1888.—GEHRUNG, EUGENE C., M.D. President and Chief of the Gynecological Department of the South Side Dispensary; Consulting Gynecologist of the Missouri Baptist Sanatorium; Corresponding Member, Société Obstétricale et Gynécologique de Paris; Membre Titulaire de la Société Française d'Electrothérapie. N. E. corner Vandeventer Avenue and Westminster Place, St. Louis.

1881.—†GILETTE, WALTER R., M.D. 1889.

1891.—GOFFE, J. RIDDLE, Ph.B., M.D. Professor of Gynecology, New York Polyclinic; Gynecologist to Randall's Island Hospital; Assistant Gynecologist to the New York Skin and Cancer Hospital. *Council*, 1896. 22 East Thirty-fifth Street, New York.

*Founder.*—*GOODELL, WM., A.M., M.D., LL.D. 1895.

†GOODMAN, JOHN, M.D. 1892.

1888.—GORDON, SETH C., M.D. Lecturer on Diseases of Women, Portland School of Medical Instruction; Surgeon to the Maine General Hospital; Consulting Surgeon to the Maine Eye and Ear Infirmary; President of the Maine Academy of Medicine and Science; Ex-President of the Maine Medical Association; Ex-President of the Section of Obstetrics and Gynecology of the American Medical Association; Fellow of the British Gynecological Society. *Council*, 1892. Portland, Maine.

1890.—GRANDIN, EGBERT H., M.D. Consulting Obstetric Surgeon to the New York Maternity Hospital; Consulting Phy-

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sician to the French Hospital. 36 East Fifty-eighth Street, New York.

1886.—GREEN, CHARLES M., A.B., M.D. Assistant Professor of Obstetrics, Harvard University; Obstetric Physician to the Boston Dispensary; Assistant Visiting Physician to the Boston Lying-in Hospital; Assistant Visiting Physician for Diseases of Women, Boston City Hospital. *Council*, 1894–'95. 78 Marlborough Street, Boston.

1887.—HANKS, HORACE TRACY, M.D. Professor of Diseases of Women, New York Post-Graduate School; Surgeon to the Woman's Hospital; Consulting Surgeon to the Northeastern Dispensary; Fellow of the British Gynecological Society; President of the New York Obstetrical Society 1887–'89; Vice-President of the New York Academy of Medicine 1882–'85. *Council*, 1892. 766 Madison Avenue, New York.

1895.—HARRIS, PHILANDER A., M.D. Visiting Physician to the Paterson General Hospital. 26 Church Street, Paterson, New Jersey.

1894.—HARRISON, GEORGE T., A.M., M.D. 221 West Twenty-third Street, New York.

1894.—HENROTIN, FERNAND, M.D. Professor of Gynecology, Chicago Polyclinic; Senior Surgeon to the Alexian Brothers' Hospital; Ex-President of the Chicago Gynecological Society; Consulting Gynecologist to St. Joseph's Hospital; Corresponding Member of the Belgian Gynecological Society; American Secretary of the International Obstetrical and Gynecological Congress. 353 La Salle Avenue, Chicago.

1891.—HIRST, BARTON COOKE, M.D. Professor of Obstetrics, University of Pennsylvania; Obstetrician to the University and Maternity Hospitals; Visiting Obstetrician to the Preston Retreat; Gynecologist to the Howard Hospital and to the Southeastern Hospital for Women and Children; Consulting Obstetrician to the Lying-in Charity. 1821 Spruce Street, Philadelphia.

1892.—HOLMES, HORATIO R., M.D. Professor of Gynecology, Medical Department of Willamette University. Portland, Oregon.

*Founder.*—HOWARD, WILLIAM T., M.D. Professor of the

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Diseases of Women and Children and of Clinical Medicine, University of Maryland; Gynecologist to the University Hospital; Gynecologist to the Woman's Hospital of the State of Maryland; Consulting Physician to the Hebrew Hospital and Asylum Association of Baltimore, Maryland. *Vice-President*, 1880. *Council*, 1883. *President*, 1884. 804 Madison Avenue, Baltimore.

1885.—*HUNTER, JAMES BRADBRIDGE, M.D. 1889.

1891.—INGALLS, PHINEAS H., A.M., M.D. Gynecologist to the Hartford Hospital. 112 High Street, Hartford, Conn.

1875.—†INGHAM, JAMES V., M.D. 1889.

1877.—*JACKSON, A. REEVES, A.M., M.D. 1892.

1889.—JAGGARD, W. W., M.D. Professor of Obstetrics, Chicago Medical College; Obstetrician to Mercy Hospital; President of the Chicago Gynecological Society. 2910 Indiana Avenue, Chicago.

1886.—JANVRIN, JOSEPH E., M.D. President of the New York Obstetrical Society (1889–1891); Gynecologist to the Skin and Cancer Hospital; Consulting Surgeon to St. Elizabeth's Hospital. *Council*, 1889, 1892. 191 Madison Avenue, New York.

1895.—JARMAN, GEORGE WALLACE, A.M., M.D. Gynecologist to the New York Cancer Hospital; Obstetric Surgeon to the New York Maternity Hospital; Chief of Clinic Department of Diseases of Women, Vanderbilt Clinic. 61 West Seventy-fourth Street, New York.

*Founder.*—JENKS, EDWARD W., M.D., LL.D. Professor of Gynecology and Operative Midwifery, Michigan College of Medicine and Surgery. *Council*, 1879. *Vice-President*, 1889. 84 Lafayette Avenue, Detroit.

1885.—JEWETT, CHARLES, A.M., M.D. Professor of Obstetrics and Diseases of Children, Long Island College Hospital, Brooklyn; Attending Physician to Long Island College Hospital; Physician-in-Chief to Department of Children's Diseases, St. Mary's Hospital, Brooklyn; Consulting Obstetrician to Kings County Hospital; President of the New York Obstetrical Society, 1893–'94; President of the Brooklyn Gynecological Society, 1893–'94. Fellow of the British Gynecological Society. *Council*, 1894–'95. 330 Clinton Avenue, Brooklyn.

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*Founder.*—JOHNSON, JOSEPH TABER, A.M., Ph.D., M.D. Professor of Gynecology, University of Georgetown; Gynecologist to the Providence Hospital; President of the Woman's Dispensary; President of the Medical Society of the District of Columbia (1887); Member of the British Medical Association; Fellow of the British Gynecological Society; President of the Washington Obstetrical and Gynecological Society. *Council*, 1881, 1884. *Secretary*, 1885–'90. *Vice-President*, 1891. 926 Farragut Square, Washington.

1886.—JOHNSTONE, ARTHUR W., A.M., M.D. Professor of Gynecology, Woman's Medical College; Fellow of the British Gynecological Society. *Council*, 1893–'94. Madisonville Road, Cincinnati.

1892.—*KEATING, JOHN M., M.D., LL.D. 1893.

1887.—KELLY, HOWARD A., M.D. Professor of Gynecology and Obstetrics in Johns Hopkins University; Gynecologist and Obstetrician to the Johns Hopkins Hospital; Consulting Surgeon to the Kensington Hospital for Women, Philadelphia. Johns Hopkins Hospital, Baltimore.

1886.—KING, ALBERT F. A., A.M., M.D. Professor of Obstetrics and Diseases of Women and Children in the Medical Department of the Columbian University, Washington, and in the University of Vermont; President of the Washington Obstetrical and Gynecological Society (1885–'87); Fellow of the British Gynecological Society; Consulting Physician to the Children's Hospital, Washington; Consulting Physician to the Woman's Dispensary. 1315 Massachusetts Avenue, N. W., Washington.

1892.—KIRKLEY, CYRUS A., M.D. Toledo, Ohio.

1887.—KOLLOCK, CORNELIUS, A.M., M.D. Ex-President South Carolina Medical Association; Fellow of the American Academy of Medicine; President of the Pee-Dee Medical Association; Fellow of the Southern Surgical and Gynecological Association. *Vice-President*, 1892. Cheraw, S. C.

1891.—KRUG, FLORIAN, M.D. Gynecologist to the German Hospital; Professor of Gynecology, New York Polyclinic; Fellow of the American Association of Obstetricians and Gynecologists. 13 East Forty-first Street, New York.

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1881.—*Lee, Charles Carroll, A.M., M.D., LL.D. 1893.

*Founder.*—Lusk, William T., A.M., M.D. Professor of Obstetrics, of the Diseases of Women and Children, and of Clinical Midwifery, Bellevue Hospital Medical College; Physician to Bellevue Hospital; Consulting Surgeon to the Maternity Hospital; Visiting Physician to the Emergency Lying-in Hospital. *Vice-President*, 1889. *President*, 1894. 47 East Thirty-fourth Street, New York.

*Founder.*—*Lyman, George H., M.D. 1891.

1891.—MacLaren, Archibald, B.S., M.D. Clinical Professor of Gynecology, Minnesota State University; Member of the Minnesota Academy of Medicine; Gynecologist to the City Hospital; Gynecologist to St. Joseph's Hospital; Surgeon to St. Luke's Hospital. 350 St. Peter Street, St. Paul, Minn.

1892.—McLean, Malcolm, M.D. Surgeon to St. Andrew's Infirmary for Women; Consulting Gynecologist to the Randall's Island Hospital. 31 East One Hundred and Twenty-sixth Street, New York.

1892.—McMonagle, Beverly, M.D. Crocker Building, San Francisco, Cal.

1882.—Mann, Matthew D., A.M., M.D. Professor of Obstetrics and Gynecology, University of Buffalo; Gynecologist and Consulting Obstetrician to the Buffalo General Hospital. *Treasurer*, 1883–'94. *President*, 1894–'95. 37 Allen Street, Buffalo, N. Y.

1883.—Maury, Richard B., M.D. *Council*, 1885, 1888. *Vice-President*, 1892. 111 Court Street, Memphis, Tenn.

1894.—Montgomery, Edward E., A.M., M.D. Professor of Clinical Gynecology, Jefferson Medical College; Gynecologist to Jefferson Medical College and to St. Joseph's Hospitals; Obstetrician to the Philadelphia Hospital. 1715 Walnut Street, Philadelphia.

1891.—Moseley, William E., M.D. President of the Baltimore Gynecological and Obstetrical Society; Gynecologist to the Union Protestant Infirmary. 614 North Howard Street, Baltimore, Md.

*Founder.*—Mundé, Paul F., M.D. Master in Obstetrics, Vienna; Professor of Gynecology, New York Polyclinic and

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Dartmouth College; Gynecologist to Mount Sinai Hospital; Consulting Surgeon to St. Elizabeth's Hospital. *Treasurer*, 1876–'83. *Vice-President*, 1884. 20 West Forty-fifth Street, New York.

1890.—MURRAY, ROBERT A., M.D. Obstetric Surgeon to the New York Maternity Hospital. 235 West Twenty-third Street, New York.

1894.—NEWMAN, HENRY PARKER, A.M., M.D. Professor of Obstetrics and Clinical Gynecology, College of Physicians and Surgeons of Chicago; Professor of Gynecology, Chicago Post-Graduate Medical School; Surgeon (Department of Diseases of Women) St. Elizabeth, Post-Graduate, and Chicago Hospitals. 492 Adams Street, Chicago.

1891.—NOBLE, CHARLES P., M.D. Surgeon to Kensington Hospital for Women; Lecturer on Gynecology, Philadelphia Polyclinic. 1637 North Broad Street, Philadelphia.

1893.—NORRIS, RICHARD C., A.M., M.D. Instructor in Obstetrics, Medical Department, University of Pennsylvania; Assistant Obstetrician, University Maternity; Consulting Obstetrician and Attending Gynecologist, Southeastern Dispensary and Hospital for Women and Children; Physician to the Methodist Episcopal Hospital; Obstetrical Registrar to the Philadelphia Hospital. 1028 Spruce Street, Philadelphia.

1880.—PALMER, CHAUNCEY D., M.D. Professor of Obstetrics, of the Medical and Surgical Diseases of Women, and of Clinical Gynecology in the Medical College of Ohio; Professor of Gynecology and of Clinical Gynecology in the Woman's State Hospital and Medical College; Obstetrician and Gynecologist to the Cincinnati Hospital. *Council*, 1888. Avondale, Cincinnati.

1885.—PARISH, WILLIAM H., M.D. Obstetrician to the Philadelphia Hospital; Consulting Obstetrician to the Philadelphia Lying-in Charity; Professor of Anatomy in the Woman's Medical College of Pennsylvania; Professor of Obstetrics, Dartmouth Medical College; Consulting Surgeon, Kensington Hospital; Consulting Gynecologist, St. Agnes's Hospital; Gynecologist to the Philadelphia Polyclinic. *Vice-President*, 1893. 1435 Spruce Street, Philadelphia.

*Founder.*—PARVIN, THEOPHILUS, M.D., LL.D. Professor of

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Obstetrics and of the Diseases of Women and Children in the Jefferson Medical College. *Council*, 1876–'77. *Vice-President*, 1882, 1886. *President*, 1893. 1626 Spruce Street, Philadelphia.

*Founder.*—*Peaslee, E. Randolph, M.D., LL.D. 1878.

1895.—Penrose, Charles B., A.M., Ph.B., M.D. Professor of Gynecology, University of Pennsylvania; Gynecologist to the University Hospital; Surgeon to the Gynecean Hospital. 1331 Spruce Street, Philadelphia.

*Founder.*—†Penrose, Richard A. F., A.M., M.D., LL.D. 1885.

1881.—Polk, William M., M.D. Professor of Obstetrics and Diseases of Women and Children, University of the City of New York; Physician to Bellevue Hospital and to the Emergency Lying-in Hospital; Consulting Gynecologist to St. Luke's and St. Vincent's Hospitals. *Vice-President*, 1890. *Council*, 1891. *President*, 1896. 7 East Thirty-sixth Street, New York.

1892.—Pryor, William R., M.D. Professor of Gynecology at the New York Polyclinic; Visiting Surgeon to the City Hospital, Department of Gynecology; Visiting Gynecologist to St. Elizabeth's Hospital. 15 Park Avenue, New York.

1877.—Reamy, Thaddeus A., A.M., M.D., LL.D. Professor of Clinical Gynecology in the Medical College of Ohio; Gynecologist and Obstetrician to the Cincinnati Hospital; Gynecologist to the Good Samaritan Hospital; Surgeon to the Woman's Hospital, Cincinnati; Consulting Gynecologist to Christ's Hospital; Consulting Gynecologist to the Ohio State Hospital for Women; Fellow of the Medico-Chirurgical Society of Philadelphia; Corresponding Member of the Boston Gynecological Society. *Vice-President*, 1881. *Council*, 1883. *President*, 1885. Oak Street, Cincinnati.

*Founder.*—Reeve, John C., M.D., LL.D. President of the Medical Staff of St. Elizabeth's Hospital; formerly Professor of Materia Medica and Therapeutics, Medical College of Ohio. *Council*, 1881, 1885. *Vice-President*, 1887. Corner of Third and Wilkinson Streets, Dayton, Ohio.

1890.—Reynolds, Edward, M.D. Physician to the Boston Lying-in Hospital, Out-patient Department; Assistant in Gynecology, Boston City Hospital; Instructor in Obstetrics and

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Assistant in Gynecology, Harvard University. *Council*, 1894. 130 Marlborough Street, Boston.

1877.—Reynolds, John P., M.D. Formerly Professor of Obstetrics, Harvard University; Consulting Surgeon to the Boston City Hospital. *President*, 1890. 236 Clarendon Street, Boston.

*Founder.*—Richardson, William L., M.D. Professor of Obstetrics, Harvard University; Physician to the Boston Lying-in Hospital; Visiting Physician to the Massachusetts General Hospital. *Vice-President*, 1884. 225 Commonwealth Avenue, Boston.

1892.—†Ritchie Park, M.D. 1894.

1881.—Sawyer, Edward Warren, M.D. 3733 Vincennes Avenue, Chicago.

1879.—*Scott, John, M.D., M.R.C.S.I. 1886.

1886.—Sims, H. Marion, M.D. Surgeon to St. Elizabeth's Hospital; Professor of Gynecology, New York Polyclinic. 30 West Fifty-eighth Street, New York.

*Founder.*—*Sims, J. Marion, M.D., LL.D. 1883.

*Founder.*—†Sinclair, Alexander D., M.D. 1895.

*Founder.*—Skene, Alexander J. C., M.D. Professor of the Medical and Surgical Diseases of Women, Long Island College Hospital. *Council*, 1878, 1880. *President*, 1886–'87. 167 Clinton Street, Brooklyn.

*Founder.*—*Smith, Albert H., M.D. 1886.

1892.—Smith, A. Lapthorn, A.B., M.D., M.R.C.S. (Eng.). Fellow of the London Obstetrical Society; Fellow of the Société de Médecine Pratique, Paris; Fellow of the American Electro-Therapeutic Association; Ex-Professor of Gynecology in Bishop's College; Gynecologist and Consulting Surgeon to the Montreal Dispensary; Surgeon to the Montreal Woman's Hospital; Honorary Physician to the Y. W. C. Association of Montreal. 250 Bishop Street, W., Montreal, Canada.

1891.—*Strong, Charles P., A.B., M.D. 1893.

1879.—Sutton, R. Stanbury, A.M., M.D., LL.D. Formerly President of the American Academy of Medicine, of the Mississippi Valley Medical Association, and of the Pittsburg Obstetrical and Gynecological Society; Associate Fellow of the Philadelphia

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Obstetrical Society; Fellow of the British Gynecological Society; Surgeon to Terrace Bank Hospital for Women. *Council*, 1883. 515 Penn Avenue, Pittsburg.

*Founder.*—*Trask, James D., M.D. 1883.

1891.—Tuttle, George M., A.B., M.D. Professor of Gynecology, College of Physicians and Surgeons; Gynecologist to Roosevelt Hospital; Consulting Gynecologist to the New York Cancer Hospital and Infirmary for Women and Children. 49 West Thirty-eighth Street, New York.

1879.—†Underhill, J. W., M.D. 1886.

*Founder.*—Van de Warker, Ely, M.D. Surgeon to the Central New York Hospital for Women; Surgeon to the Syracuse Woman's and Children's Hospital. *Council*, 1884–'89, 1895–'96. *Vice-President*, 1889–'90. 104 Fayette Park, Syracuse, N. Y.

*Founder.*—*Wallace, Ellerslie, M.D. 1885.

1891.—Wathen, William H., A.M., M.D., LL.D. Professor of Abdominal Surgery and Gynecology in the Kentucky School of Medicine; Ex-President of the Section on Obstetrics and Gynecology of the American Medical Association; Ex-President of the Kentucky State Medical Society; Fellow of the American Gynecological Society and of the Southern Surgical and Gynecological Society; Gynecologist to the Louisville City Hospital and to the Kentucky School of Medicine Hospital. 628 Fourth Avenue, Louisville.

1892.—Williams, J. Whitridge, A.B., M.D. Associate in Obstetrics, Johns Hopkins University; Pathologist to Woman's Hospital of Maryland. 845 Park Avenue, Baltimore.

*Founder.*—*White, James P., M.D. 1881.

1877.—*Wilson, Elwood, M.D. 1889.

*Founder.*—Wilson, Henry P. C., M.D. Ex-President of the Medical and Chirurgical Faculty of Maryland, of the Baltimore Academy of Medicine, and of the Baltimore Obstetrical and Gynecological Society; Surgeon to the Hospital for the Women of Maryland; Consulting Gynecologist to St. Agnes's Hospital; Member of the British Medical Association; Vice-President of the British Gynecological Society; Fellow of the Southern Surgical and Gynecological Association; Honorary Fellow of the

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Edinburgh Obstetrical Society; Consulting Surgeon to the Johns Hopkins Hospital. *Vice-President*, 1879. *Council*, 1884. *President*, 1889. 814 Park Avenue, Baltimore.

1886.—WYLIE, W. GILL, M.D. Professor of Gynecology, New York Polyclinic; Gynecologist to Bellevue Hospital; Consulting Surgeon to the Methodist Episcopal Hospital, Brooklyn; Fellow of the British Gynecological Society. 28 West Fortieth Street, New York.

Total, 92 Active Fellows.

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MINUTES OF THE PROCEEDINGS

AT THE

# TWENTIETH ANNUAL MEETING

OF THE

# AMERICAN GYNECOLOGICAL SOCIETY,

HELD IN

LEVERING HALL,
JOHNS HOPKINS UNIVERSITY,

*Baltimore, Md.*

MAY 28, 29, AND 30, 1895.

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## TWENTIETH ANNUAL MEETING.

BALTIMORE, TUESDAY, WEDNESDAY, AND THURSDAY,
*May* 28, 29, *and* 30, 1895.

The following Fellows were present:

| | |
|---|---|
| THOMAS A. ASHBY | BALTIMORE. |
| B. F. BAER | PHILADELPHIA. |
| WILLIAM H. BAKER | BOSTON. |
| J. M. BALDY | PHILADELPHIA. |
| B. B. BROWNE | BALTIMORE. |
| A. H. BUCKMASTER | CHARLOTTESVILLE, VA. |
| JOHN BYRNE | BROOKLYN. |
| JAMES R. CHADWICK | BOSTON. |
| CLEMENT CLEVELAND | NEW YORK. |
| HENRY C. COE | NEW YORK. |
| ANDREW F. CURRIER | NEW YORK. |
| FRANCIS H. DAVENPORT | BOSTON. |
| EDWARD P. DAVIS | PHILADELPHIA. |
| THOMAS M. DRYSDALE | PHILADELPHIA. |
| A. PALMER DUDLEY | NEW YORK. |
| GEORGE M. EDEBOHLS | NEW YORK. |
| BACHE McE. EMMET | NEW YORK. |
| T. ADDIS EMMET | NEW YORK. |
| GEORGE J. ENGELMANN | BOSTON. |
| JAMES H. ETHERIDGE | CHICAGO. |
| WILLIS E. FORD | UTICA. |
| J. RIDDLE GOFFE | NEW YORK. |
| S. C. GORDON | PORTLAND, ME. |
| GEORGE T. HARRISON | NEW YORK. |
| FERNAND HENROTIN | CHICAGO. |
| H. R. HOLMES | PORTLAND, OREGON. |
| WILLIAM T. HOWARD | BALTIMORE. |
| P. H. INGALLS | HARTFORD. |
| JOSEPH E. JANVRIN | NEW YORK. |
| EDWARD JENKS | DETROIT. |
| CHARLES JEWETT | BROOKLYN. |

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|---|---|
| JOSEPH TABER JOHNSON | WASHINGTON. |
| HOWARD A. KELLY | BALTIMORE. |
| WILLIAM T. LUSK | NEW YORK. |
| ARCHIBALD MACLAREN | ST. PAUL. |
| BEVERLY MCMONAGLE | SAN FRANCISCO. |
| MATTHEW D. MANN | BUFFALO. |
| EDWARD E. MONTGOMERY | PHILADELPHIA. |
| WILLIAM E. MOSELEY | BALTIMORE. |
| PAUL F. MUNDÉ | NEW YORK. |
| ROBERT A. MURRAY | NEW YORK. |
| CHARLES P. NOBLE | PHILADELPHIA. |
| RICHARD C. NORRIS | PHILADELPHIA. |
| THEOPHILUS PARVIN | PHILADELPHIA. |
| WILLIAM M. POLK | NEW YORK. |
| THADDEUS A. REAMY | CINCINNATI. |
| ALEXANDER J. C. SKENE | BROOKLYN. |
| A. LAPTHORN SMITH | MONTREAL. |
| R. STANSBURY SUTTON | PITTSBURG. |
| ELY VAN DE WARKER | SYRACUSE. |
| WILLIAM H. WATHEN | LOUISVILLE. |
| J. WHITRIDGE WILLIAMS | BALTIMORE. |
| H. P. C. WILSON | BALTIMORE. |
| W. GILL WYLIE | NEW YORK. |

Total, 54 Fellows.

FIRST DAY.—*Tuesday, May* 28, 1895.

*Morning Session.*—The meeting was called to order by the President, Dr. Matthew D. Mann, of Buffalo, thirty-eight Fellows being present.

The following address of welcome was delivered by Dr. Thomas A. Ashby, of Baltimore:

*Address of Welcome.*

After another year of anxious care and responsible labor we come together from every section of our country to grasp the hand of fellowship, to exchange cordial greetings, and to strengthen the ties which bind us together in a noble work of co-operation and of fraternity.

Our Society exists for two purposes. The first object is to promote knowledge and truth in a special field of labor as honorable and responsible as any that can engage the attention of

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learned and earnest minds. Its second object is to stimulate generous feelings and sincere friendship among its members, and to unite all in earnest work, in harmony of effort, and in loyalty to noble principles of science and benevolence. During the entire life of this Society these purposes have been enforced. Its Fellows have come together from year to year from widely separated fields of labor, bringing the experience gathered by toil and observation as an offering to the scientific work of our meetings.

These offerings have been presented and have been accepted in a spirit of frankness and independence which has done credit to the fairness of our proceedings. Our associated work has been marked no less for the wisdom and soundness of its conclusions than for the originality which has characterized its contributions to the science and the art of gynecology. From the very beginning of its organization until the present moment this Society has been the exponent of every advance which has been made in correct methods of work and in true principles of scientific progress. Its deliberations have been accepted by the entire profession as the trusted offerings of earnest and learned men. We have, then, no occasion to apologize for the past achievements of this body.

We have every encouragement to press forward along the lines of policy established by our predecessors, whether with us to-day or numbered with the silent majority. It is our noble privilege to seek to maintain our present honored position among the scientific organizations of the world. With the marvellous development of original work, which followed the cultivation of an undeveloped territory during the past nineteen years, we can no longer hope to keep this pace.

The fields of intravaginal and of intraabdominal surgery had scarcely been entered when this Society was organized. In its short career have been witnessed the startling results which have followed as procedure after procedure has been inaugurated and new lines of thought and action have become established principles. Our work for the future must progress along lines perhaps less striking in their brilliancy, but equally promising, we believe, in their lasting results. We have reached an era of



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painstaking labor, of accuracy and minuteness of observation, and of perfection in technique. Methods of study and of work must yield obedience to habits of detail, to careful consideration of minor conditions, and to problems which must largely be evolved by study in the laboratory and in the operating-room. While it was possible for a McDowell, toiling in the wilds of Kentucky, to inaugurate the field of abdominal surgery, and for Marion Sims, in the swamps of Alabama, to create the field of intravaginal plastic surgery, no such opportunities are presented to the gynecological surgeon of to-day. All grosser forms of disease and of operative procedures within the abdomen and vagina have been considered. It remains, for the most part, for this and for coming generations in our department to perfect the technique of recognized procedures, to define the influence of minor conditions, to mark distinctions between methods and plans of action, and to unravel those problems in etiology which bacteriological investigations may show to have an influence upon disease and upon operative work. Along these lines of progress many obscure problems confront us, and yet I doubt not that in the future, as in the past, the Fellows of this Society will be found leading the advance column in the elucidation of these unknown conditions.

Mr. President, in meeting here in our city I need not call your attention to the facilities which exist for original study and investigation. With men and institutions equipped for every form of scientific and clinical work, it is believed that our city will contribute no insignificant part to the perfection of our knowledge of scientific gynecology.

While not possessing the population, wealth, and commercial activity of a few older and larger centres of population, Baltimore has always shown her appreciation of every form of human achievement. Her institutions of learning, her public libraries, and the beautiful monuments which ornament many of her parks and public squares, bear testimony to the fact that our people are not wanting in sentiments and actions which ennoble human nature and exalt manly and heroic efforts.

While sensible of the advantages which come from the careful and diligent pursuit of every form of mental and physical labor,

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our people fully recognize that there are higher objects and duties than the incessant chase for wealth. We are a social and humanity-loving people in the strict acceptation of these terms.

Mr. President and Fellows, while in the pursuit of the noble scientific interests which call us together, we ask you to interrupt your labor from time to time and to enjoy the hospitality which your professional brethren of our city will cordially extend to you. We welcome you all to our hearts and homes.

We bid you lay aside the cares and anxieties which may follow you from your respective fields of labor, and to share the pleasure we experience in having you meet in our beautiful city.

Let us cultivate here the friendships and cordial feelings which have always characterized previous meetings of our Society, so that we all may feel, when our meeting has come to its close, that it has been good for us to have met together. On behalf of the resident Fellows of our Society, I again bid you a most cordial welcome.

The PRESIDENT: I desire, on behalf of the Society, to return the expression of good-fellowship, and to say that the Society always feels itself to be peculiarly fortunate when the meeting occurs in Baltimore. We always have a capital good time, and we can only say that we reciprocate all the kindly, cordial feelings that are expressed by the Baltimore gentlemen.

The following gentlemen were nominated as guests of the Society: Dr. Charles Jacobs, of Brussels; Dr. Thomas Linn, of Nice, France; Dr. H. D. Penny, of Montana; Dr. Philander Harris, of Paterson; Dr. J. N. West and Dr. B. H. Wells, of New York; Dr. J. M. Coble, of Dallas, Texas; Dr. Goss, of Georgia; Dr. Keogh, of Indiana; Dr. Wills, of Los Angeles; Dr. J. W. Bean, of Washington; Dr. James Campbell, of Hartford; Drs. W. H. S. Skene and George McNaughton, of Brooklyn; Dr. F. A. Adams, of Syracuse; Dr. Brinkley, of Chicago; Drs. T. S. Buckley, Otto Ramsey, J. G. Clark, F. E. Chatard, Louise Eaton, and Sue Radcliffe, of Baltimore; the Fellows of the Baltimore Obstetrical and Gynecological Society.

Before the proceedings began Dr. Kelly moved that the reading of papers be restricted to twenty minutes, ten minutes being allowed to each gentleman opening the discussion, and five min-

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utes to each succeeding speaker. Dr. Baldy offered an amendment to substitute "ten" for "five," which was lost. The original motion was then carried.

Dr. Gordon moved that in the absence of the writers of papers such papers be read by title only. Carried.

Dr. Howard A. Kelly, of Baltimore, read the opening paper on "The Renal Catheter and its Uses in the Diagnosis and Treatment of Renal Disease," which was discussed by Drs. Etheridge, Mundé, Gordon, Skene, B. M. Emmet, MacLaren, Baldy, and the President, the reader closing.

Dr. S. C. Gordon, of Portland, Maine, read a paper on "Hysterectomy for Uterine Fibroids," followed by one by Dr. T. Addis Emmet, of New York, on "The Use of Traction and Morcellation for the Removal of Fibroids *versus* Hysterectomy."

These were discussed together, Dr. W. M. Polk opening the discussion, followed by Drs. Baldy, Mundé, Kelly, Sutton, McMonagle, A. P. Dudley, Skene, Engelmann, Montgomery, Howard, Buckmaster, and Goffe; concluding remarks were made by Drs. Gordon and Emmet.

Dr. Archibald MacLaren, of St. Paul, presented a paper on "Ligation of the Pedicle with Catgut," which was discussed by Drs. A. P. Dudley, Polk, Kelly, and the President.

Dr. J. M. Baldy, of Philadelphia, read a paper entitled "Abdominal Section for Puerperal Septicæmia." Dr. Fernand Henrotin opened the discussion, followed by Dr. Wylie. On motion, further discussion was postponed until the following day.

*Afternoon Session.*

Dr. Paul F. Mundé, of New York, read a paper entitled "The Present Treatment of Uterine Displacements." Dr. A. Lapthorn Smith, of Montreal, read one on "My Experience with Ventrofixation and Alexander's Operation," followed by Dr. Clement Cleveland, of New York, who discussed "Alexander's Operation."

Dr. F. H. Davenport opened the discussion on the three papers, followed by Drs. Van de Warker, Coe, T. A. Emmet, Polk, Baldy, and Edebohls. Closing remarks were made by the readers.

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On motion by Dr. Buckmaster, the Secretary was directed to note in the minutes that the discussion had been terminated for lack of time.

SECOND DAY.—*Wednesday, May 29th.*

*Morning Session.*—The adjourned discussion of Dr. Baldy's paper was resumed by Drs. Currier, Noble, Coe, and Smith, Dr. Baldy closing.

The President delivered his address on the subject of "The Relations of Lithæmia to Diseases of the Pelvic Organs in Women." On motion, it was voted not to discuss it.

Dr. James H. Etheridge, of Chicago, read a paper on "Renal Insufficiency in Gynecological Cases." Dr. A. J. C. Skene opened the discussion, which was continued by Drs. Kelly, Ford, Baldy, Wylie, B. McE. Emmet, and Smith, the reader closing.

A paper by Dr. Charles Jacobs, of Brussels, was read by Dr. Engelmann; it was entitled "Indications for Total Castration by the Vagina." Dr. William H. Wathen, of Louisville, read on "Vaginal Hysterectomy for Uterine Myomata and Diseases of the Adnexa." Dr. R. S. Sutton, of Pittsburg, presented specimens of uteri removed by him with a brief report of the cases. Dr. Fernand Henrotin, of Chicago, read a paper entitled "The Conservative Surgical Treatment of Septic Pelvic Disease."

*Afternoon Session.*

The discussion on the foregoing papers was opened by Dr. E. E. Montgomery, followed by Drs. Baldy, Polk, Gordon, Wylie, Janvrin, McMonagle, Lusk, Coe, and Van de Warker. Dr. Jacobs spoke briefly in closing, followed by Drs. Henrotin and Wathen.

Dr. Thaddeus A. Reamy, of Cincinnati, read a paper on "The Treatment of Puerperal Eclampsia," followed by a paper by Dr. Edward P. Davis, of Philadelphia, on "The Prophylaxis and Treatment of Eclampsia." On motion the discussion of the two papers was postponed until the next day.

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BUSINESS MEETING.

The Society was called to order at 5.30 P.M., forty-eight Fellows being present.

The Treasurer read his report, showing a balance of $1032.13. The accounts were audited by Drs. Baker and Johnson, and were found to be correct.

The Council presented the names of two gentlemen whose papers were approved. The following candidates were balloted for and were declared elected:

Dr. Charles B. Penrose, of Philadelphia.

Dr. John Duncan Emmet, of New York.

Dr. George W. Jarman, of New York.

Dr. William E. Ashton, of Philadelphia.

Dr. Philander A. Harris, of Paterson, N. J.

The resignations of Drs. Busey, Sinclair, and Foster were accepted.

Dr. Charles Jacobs, of Brussels, was elected an Honorary Fellow.

Excuses for non-attendance were received from Drs. Jaggard, King, Tuttle, Grandin, Green, and Fry.

The following officers were elected for the ensuing year:

*President.*—Dr. William M. Polk, of New York.

*Vice-Presidents.*—Dr. James H. Etheridge and Dr. Fernand Henrotin, of Chicago.

*Secretary.*—Dr. Henry C. Coe, of New York.

*Treasurer.*—Dr. J. Montgomery Baldy, of Philadelphia.

*Other Members of the Council.*—Dr. George M. Edebohls, of New York; Dr. Ely Van de Warker, of Syracuse; Dr. Edward P. Davis, of Philadelphia; Dr. J. Riddle Goffe, of New York.

Drs. Engelmann and Henrotin referred to the fact that the Society ought to be fully represented at the meeting of the International Gynecological Congress to be held in Geneva in September, 1896. On motion by Dr. Edebohls, the Secretary and President were authorized to present credentials to those Fellows who desired to attend the Congress.

Dr. H. A. Kelly was elected delegate to the Executive Com-

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mittee of the Congress of American Physicians and Surgeons, Dr. A. W. Johnstone being elected alternate.

Dr. Baldy moved that in the future the papers read by Fellows before the Congress be published in the TRANSACTIONS. Carried.

On motion by Dr. Chadwick, it was voted that the next volume of the TRANSACTIONS should contain a general index to the twenty volumes.

Dr. Baldy moved that all papers submitted by candidates should be sent to the Council without the names of the writers being affixed. Carried.

It was voted that the Treasurer should be instructed to send out bills for five dollars, so as to meet the indebtedness for the rest of the year, and that the fiscal year should hereafter begin on January 1st.

Amendments to the Constitution proposed by Drs. Edebohls, Wylie, Johnstone, and Wathen were tabled.

The following amendment to Article VI., by Dr. Baldy, was was carried: "The annual meeting of the Society shall be held regularly on the fourth Tuesday in May, at such a place as shall be designated by the Society at the previous annual meeting.

It was voted that the next meeting of the Society should be held in New York, on the fourth Tuesday in May, 1896.

THIRD DAY.—*Thursday, May 30th.*

*Morning Session.*—The discussion on the papers by Drs. Reamy and Davis was opened by Dr. W. T. Lusk, and was continued by Drs. Smith, Engelmann, and the President, Dr. Reamy closing the debate.

Dr. Willis E. Ford, of Utica, discussed the subject of "The Ultimate Results of Trachelorrhaphy," remarks being made by Drs. Cleveland, Engelmann, Currier, Gordon, A. P. Dudley, Harrison, and Holmes.

A paper by Ely Van de Warker, of Syracuse, entitled "True Pelvic Cellulitis," was discussed by Drs. Smith, Williams, Dudley, Etheridge, and Wylie.

Dr. W. Gill Wylie's paper on "Prevention of Uterine Disease

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due to Child-bearing" was discussed by Drs. A. P. Dudley, Wilson, Lusk, and Williams.

The concluding paper was read by Dr. J. Whitridge Williams, of Baltimore, the title being "Deciduoma Malignum."

Dr. Lusk showed some plates illustrating the technique of symphyseotomy.

The following papers were read by title and appear in the TRANSACTIONS: "Deep Incision of the Parturient Cervix," by Dr. J. C. Edgar; "Trachoma of the Female Genito-urinary Tract," by Dr. A. W. Johnstone; "Symphyseotomy in Canada and the United States," by Dr. R. P. Harris; "Late Infection in the Puerperal State," by E. H. Grandin; "Artificial Abortion," by Dr. H. J. Garrigues. "In Memoriam—Dr. William Goodell," by Dr. B. C. Hirst.

A vote of thanks was given to the authorities of the Johns Hopkins University for the use of Levering Hall.

The Fellows expressed by a unanimous vote their appreciation of the hospitality shown by the Baltimore Fellows and the Members of the Baltimore Obstetrical and Gynecological Society.

On motion, the thanks of the Society were extended to the retiring President for the able and courteous manner in which he had conducted the proceedings.

The President replied as follows:

I thank you very much for the expression of good-feeling which you have conveyed in this resolution. I think that we can safely congratulate ourselves on the success of this meeting. It has been said by several that it is the most successful meeting in the history of the Society, and to have been the one to preside over your deliberations at such a time is certainly a thing of which a man may well be proud, and it will be one of the pleasantest recollections of my life. I thank you most heartily for the courtesy with which you have treated me, and for the way in which you have abided by my decisions. I can assure you that it has not always been a pleasant matter to stop short an interesting discussion and to call men down when they had much that was of interest to say, but in carrying out the powers that were delegated to me I felt that it was my duty to do

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so. I am very glad, indeed, that you have appreciated the position in which I was placed.

I do not think that it would be fair to stop without giving credit to him to whom it belongs for the success of the meeting. While I may claim a little of it, I am sure that the greater share is due to the untiring efforts of our Secretary. Dr. Coe has been working a year for the success of this meeting, and I only wish that he was here that I might express to him personally my gratitude for the aid which he has given me, and for the good work which he has done in the position of Secretary.

Before I close, according to custom, I must introduce to you your President-elect. I am very proud, indeed, to feel that I preceded such a man as Dr. Polk, proud that I was considered worthy before him; I feel that it adds greatly to the honor. Dr. Polk and I have been friends for many years, since we were boys together in New York, and I can assure him that I appreciate his friendship, and it gives me the sincerest pleasure to be able to introduce him to you as your President-elect.

Dr. William M. Polk, of New York: All that I can say is, if in the capacity of President of this Society I can serve you half as well as the gentleman who has preceded me I shall be satisfied.

The Society adjourned, to meet in New York on the fourth Tuesday in May, 1896.

HENRY C. COE,

*Secretary.*

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# CONSTITUTION.

I. This Society shall be known as the AMERICAN GYNECOLOGICAL SOCIETY.

II. The object of this Society shall be the promotion of knowledge in all that relates to the Diseases of Women and to Obstetrics.

### FELLOWS.

III. The Fellows of this Society shall consist of Fellows and Honorary Fellows.

The Fellows shall not exceed one hundred in number.

The Honorary Fellows shall not exceed ten American and twenty-five foreign.

Candidates shall be proposed to the Council one month before the first day of meeting by two Fellows, and shall be balloted for at the annual meeting, a list of the names having been sent to every Fellow with the notification of the meeting.

A two-thirds affirmative vote of all the Fellows present shall constitute an election, fifteen Fellows at least being present.

No one shall be eligible for active fellowship until he shall have submitted to the Council a paper on some subject connected with Gynecological Science.

### HONORARY FELLOWS.

IV. The power of nominating Honorary Fellows shall be vested in the Council.

The election shall take place in the same manner as that of ordinary Fellows.

They shall enjoy all the privileges of other Fellows, but shall not be required to pay any fee, or be allowed to hold any office or to cast any vote.

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OFFICERS.

V. The officers of the Society shall be a President, two Vice-Presidents, a Secretary, and a Treasurer, who, with four other Fellows, shall constitute the Council of the Society.

The nomination of all officers shall be made in open session at the business meeting, and the same shall be elected by ballot.

The officers shall enter upon their duties immediately before the adjournment of the meeting at which they were elected, and shall hold office for one year.

Any vacancy occurring between the annual meetings shall be filled temporarily by the action of the Council.

All officers shall be eligible for reëlection.

ANNUAL MEETING.

VI. The annual meeting of the Society shall be held regularly on the fourth Tuesday in May. It shall continue for three days, unless otherwise ordered by vote of the Society.

AMENDMENTS.

VII. This Constitution may be amended by a two-thirds vote of all the Fellows present at an annual meeting, provided that notice of the proposed amendment has been given in writing at the annual meeting next preceding, and that the same has been printed in the notification of the meeting at which the vote is to be taken.

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## BY-LAWS.

PRESIDENT AND VICE-PRESIDENTS.

I. The President and Vice-Presidents shall discharge the duties belonging to their respective offices. The President shall be *ex-officio* chairman of the Council.

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SECRETARY.

II. The Secretary shall attend and keep a record of all the meetings of the Society and of the Council, of which latter he shall be *ex-officio* clerk

At each annual meeting he shall announce the names of all who have ceased to be Fellows since the last report.

He shall superintend the publication of the *Transactions*, under the direction of the Council.

He shall notify candidates of their election to fellowship.

He shall send notifications of the annual meetings and of the meetings of the Council.

TREASURER.

III. The Treasurer shall receive all moneys due, and pay all debts. He shall render an account thereof at the annual meeting, when an Auditing Committee shall be appointed to report.

COUNCIL.

IV. The Council shall meet as often as the interests of the Society may require.

Five members shall constitute a quorum.

It shall have the management of the affairs of the Society, subject to the action of the Society at its annual meetings.

It shall arrange the order for the reading of papers at the annual meetings.

It shall not have power to make the Society liable for any debts exceeding in total one hundred dollars in the course of any one year, unless specially authorized by a vote of the Society.

It shall have the entire control of the publications of the Society, with the power to reject such papers or discussions as it deems best.

The President, or any three members, may call a meeting, notice of which shall be transmitted to every member two weeks previous to the meeting.

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The Council shall determine questions by vote, or—if demanded—by ballot, the President having a casting vote.

The Council shall constitute a Board of Trial for all offences against the Constitution and By-laws, or for conduct unbecoming an honorable physician, and shall have the sole power of moving the expulsion of any Fellow.

### ORDER OF BUSINESS.

V. The Order of Business at the annual meetings of the Society shall be as follows:

I. General meeting at 10 A.M. each day.
   1. Reports of Committees.
   2. Reading of Papers and Discussion of the same.

II. The Business Meeting shall be held at half-past eight o'clock P.M. on the second day of the session, at which only Fellows of the Society shall be present. The Secretary's Record shall then be read; the Treasurer's accounts be submitted; the reports of Committees on other than scientific subjects be received; and all miscellaneous business be transacted.

### PAPERS, ETC.

VI. The titles of all papers to be read at any annual meeting shall be forwarded to the Secretary not later than two weeks before the first day of the meeting.

No paper shall be read before the Society which has already been printed, or has been read before another body.

All papers that may be read before the Society, and accepted for publication, shall become the property of the Society, and their publication shall be under the control of the Council. Such papers may be published in full in medical journals, provided that they are also printed in the *Transactions*.

### QUORUM.

VII. A quorum for business purposes shall be fifteen Fellows.

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DECORUM.

VIII. No remarks reflecting upon the personal or professional character of any Fellow shall be in order at the annual meetings, except when introduced by the Council.

ASSESSMENTS.

IX. Every Fellow shall pay in advance the sum of fifteen dollars annually.

Any Fellow whose subscription shall be more than nine months in arrears shall be reminded of the fact by the Treasurer in writing; in event of payment not being then made, he may, on vote of the Council, be dropped from the Society.

Each Fellow shall pay on admission an initiation fee of twenty-five dollars.

Any Fellow who shall neither attend nor present a paper for three successive years shall, unless he offers an excuse satisfactory to the Society, be dropped from fellowship.

AMENDMENTS.

X. Any of these By-laws may be amended, repealed, or suspended by a two-thirds vote of the Fellows present at any meeting; *provided*, previous notice in writing has been given at the annual meeting immediately preceding the one at which the vote is to be taken.

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# PAPERS

READ AT THE

## TWENTIETH ANNUAL MEETING

OF THE

# AMERICAN GYNECOLOGICAL SOCIETY,

HELD IN

## LEVERING HALL,

## JOHNS HOPKINS UNIVERSITY,

*Baltimore, Md.*

MAY 28, 29, AND 30, 1895.



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## THE PRESIDENT'S ADDRESS.

# THE RELATIONS OF LITHÆMIA TO DISEASES OF THE PELVIC ORGANS IN WOMEN.

By Matthew D. Mann, M.D.,
*Buffalo, N. Y.*

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Fellows of the American Gynecological Society: I would certainly show a very poor sense of gratitude did I not at this, the earliest opportunity, express to you my great appreciation of and gratitude for the high honor conferred upon me by my election to the office of President of this Society. I know of no position within the gift of our branch of the profession which one should prize more, or which confers greater honor upon the recipient. I assure you that I esteem it most highly and thank you most heartily.

The election of last year seems to mark a new epoch in the history of the Society. The men who have hitherto occupied this chair have been not only founders of this Society and the chief authors of its greatness, but they have been the very founders and upbuilders of the science and art of gynecology as well. Barker, Thomas, Peaslee, Sims, Byford Smith, Emmet, and their not less distinguished successors—where would gynecology be to-day without them and their work? Now you have chosen as their successor one whose only claim to greatness is that he has sat at their feet and learned of them. So a new generation is put to the front. Not that by this the older men are pushed to the rear. Far from it! May the light of such of them as are still with us

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long continue to shine brightly and lead us as it has in the past. Still, it means that the burden of the day is placed on the shoulders of the younger men, that they must in the near future, if not now, have the welfare of American gynecology in their sole keeping.

Gentlemen of the generation to which I allude, we have a weighty responsibility placed upon us. We cannot shirk it, and yet the standard which is set before us is so high that to attain to it will demand our very best endeavors and our most earnest thought. We have not only to keep up with the progress of the world at large, but to maintain for American gynecology the proud pre-eminence which she has already achieved. You know how this is to be done without advice from me. I only suggest that the way lies through hard work. I do not think that the world will be disappointed.

The success which this Society has achieved must be a constant source of pride and satisfaction to those who were instrumental in its foundation. It seems to be to-day in a more active and vigorous condition than ever before. We can certainly claim to have within our ranks a large proportion of the representative gynecologists of the land. Nineteen volumes of TRANSACTIONS testify to our energy and productiveness, while the applications for admission show that fellowship in the Society is appreciated and sought for by our rising men. Within a very short time the question of extending our membership limit will be forced upon us. I would urge upon the Society the advisability of such action. We do not desire to seem clannish or exclusive; we want to enlist in our ranks all who by their good special professional work have shown their skill and ability. Particularly do we want more obstetricians.

It is a great source of regret that more interest is not taken in obstetrical work in the Society. Obstetrics and gynecology can never be separated. They involve the study of the same organs and of many of the same diseases of these organs, only under different circumstances. A knowledge

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of both arts is necessary to make a perfect practitioner of either. If this be admitted, it is hard to understand why the gynecologists so persistently neglect the work offered by their *confrères*. It is only necessary to announce a paper on a purely obstetrical subject for at least half of the gynecologists to leave the room. This ought not so to be. Every Fellow of the Society is entitled to respect and attention, and should not be treated with the marked discourtesy of being obliged to read to half-filled benches. The science and art of obstetrics have had many high exponents in this country, and the race of the prophets is not yet extinct. Still, it cannot be questioned that obstetrics has not made the same proportionate advance among us as gynecology. This is not the time to inquire into the cause of this state of affairs; but it certainly is not to our credit, and ought to be changed. If prophylaxis be one of the highest functions of the physician, then nowhere can it be exercised to better advantage than in the lying-in room. It is a fact much to be deplored that a great many of the cases which it falls to the lot of the gynecologist to treat are the direct result of bad management in obstetric practice. Usually preventable troubles, such as traumatism of the soft parts and septic infection, are the chief results.

The teaching of obstetrics in our medical schools is very faulty. Clinical instruction is largely conspicuous by its absence. The number of great maternity hospitals in this country in which students can receive practical training can be numbered on the fingers of one hand. As a country we are far behind in this matter. This Society might by its influence do much to remedy this defect.

I cannot let the occasion pass without alluding to the great loss which we have sustained by the death of Dr. Goodell. What more or what better can we say of him than that he was the best type of a Christian gentleman and scientific physician? The influence which Dr. Goodell has exerted on American gynecology and obstetrics can scarcely be overestimated.

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He possessed less originality than some of our other great men, but all that he wrote and said impressed itself upon the profession by its strong common-sense and good judgment, as well as by its beauty of diction and simplicity. Almost his last public act was to represent this Society before the Medical Congress in Washington. His paper read there was a strong plea for a proper and rational conservatism, and was peculiarly characteristic of the man. He will always be remembered as one of that group of earnest, brilliant thinkers who, almost at its inception, made American gynecology famous. A proper memorial will be presented by one well qualified to prepare it.

It has been frequently noted that the trend of modern gynecology is largely toward the surgical side. But it must be admitted that by a resort to the knife, except in the case of injuries, we confess to a certain extent our defeat. We operate to remove what we cannot cure. This I feel sure will not always be so. Therapeutics, aided by chemistry and bacteriology, will some day place in our hands agents which will enable us to successfully combat many of the diseases for which we now resort to surgery. Even without this expected curtailment of the surgical field there are still a large number of cases which are not surgical. They constitute a class which is not always well understood or rightly treated. For their proper care a man must be a physician as well as a surgeon. They do not afford opportunities for brilliant operations leading to great renown and reward, and consequently have not attracted as much attention as they deserve. We cannot always cut the Gordian knot, but must sometimes loose it by careful study, investigation, and scientific analysis.

A recent writer has said that "what is characteristic of these modern days, so far as medicine is concerned, is the high place we assign to the study of the origin of disease." I ask your attention, then, to an attempt, feeble though it be, to throw a little light on the origin of certain rather ob-

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scure diseases of the pelvic organs, in which the pelvic disease is sometimes only of minor importance or secondary to certain general conditions.

You will perhaps have noticed that I said "pelvic diseases." I did this purposely. There are three sets of organs in the female pelvis, differing in function, but still so intimately associated, not only in position, but in function as well, that they are often involved together. No discussion of this subject would be complete which did not include the urinary and alimentary organs as well as the genital. To show how these organs may be related by their position alone, take the course of gonorrhœa as an example. Not only may this disease travel up the genital canal, but the urinary tract, even to the kidneys, may be infected. The rectum also does not always escape. I believe that it is involved more commonly than is generally supposed, and that some of the severe and intractable diseases of this region will ultimately be proved to be due to the presence of the gonococcus.

It will be admitted, then, that by contiguity alone the pelvic organs are all liable to be infected at the same time and by the same disease. While this is most generally true of gonorrhœal infection, it is true to a less degree of septic disease. A septic vaginal discharge, for example, may easily be made to infect the urinary tract. There are other ties by which the pelvic organs are united besides mere contiguity. The vascular and nervous connections are so intimate and are so joined to certain common centres that they make other bonds of union. Nor is this all. Through the nervous and vascular connections the secretions of the different glands formed in or connected with these organs may be more or less reciprocally affected; for, by reflex action, the diseased condition of one may alter the secretions of another, and thus in turn lead to new pathological changes. My meaning will perhaps be made plainer as we go on.

I shall now try to enumerate some of the symptoms, both

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subjective and objective, met with in these cases, in which the trouble seems to depend on this close inter-dependence of function and disease in the nearly-associated pelvic organs. The victims of these morbid conditions—for we can scarcely individualize it as a disease—are very numerous. The symptoms of which they complain are often vague and difficult to describe. They tell us of pains and aches in various places, many of which we call reflex. They complain of menstrual disturbances, especially dysmenorrhœa and menorrhagia, and vaginal discharges, back-aches and front-aches, troubles with the bladder and rectum, frequent and painful micturition, constipatian, and, maybe, hemorrhoids. They suffer from insomnia and dyspepsia, from coated tongue and dry skin. And, above all, and in all and before all, they tell us that they are nervous. Often the spirits are depressed, and there is sometimes a fear of impending insanity. Headaches are common, especially occipital, and intercostal neuralgia, most frequently affecting the left side, is not unusual. It is not to be imagined that all these symptoms are present in every case; some are rarely met with, while others are more common.

A physical examination often shows no serious lesion of the pelvic organs. There may be a displacement or a cervical laceration; there may not. Rarely are the tubes or pelvic peritoneum affected. The uterus may be heavy and congested, but not always. In almost every case there will be a discharge from the cervix. One or both ovaries may be heavy and prolapsed; pressure over the ureters, the base of the bladder and the urethra frequently elicits tenderness. If we pursue our investigation still further, we shall often find evidence of rectal disease, hemorrhoids perhaps, or fissure; and rarely there is a catarrhal inflammation of the lower bowel.

We must not forget the urine. If this is properly examined it will give us much information. We shall find the quantity varying, but almost always below the normal, often

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reduced to eight or ten ounces. So frequently is this condition of renal insufficiency present that I make it a rule to measure the quantity of urine passed in twenty-four hours in the case of every patient who comes into my private hospital; and I think that the results will astonish those of you whose attention has not been called to this symptom. In twenty consecutive cases, taken at random, the greatest amount of urine passed in twenty-four hours was forty-six ounces; the least amount, five and one-half ounces; average of the twenty cases, fifteen and one-half ounces, or about one-third the normal amount.

This scanty urine is always acid in reaction, usually to an excessive degree, and generally contains an excess of uric acid.

In place of scanty urine we may find this excretion to be clear, limpid, and of low specific gravity. Even when the quantity of urine is below normal the specific gravity is seldom high, showing in all these cases a deficiency in the amount of solids excreted. In fact, renal insufficiency may exist, and the total amount of urine may be near the normal. I have come to look upon this condition of renal insufficiency in its relations with pelvic diseases as of the utmost importance. That the kidneys should do their work in a perfect manner is absolutely necessary for the maintenance of health. Differ as we may as to the exact nature of the poison or poisons contained in the urine, there can be no question but that the urine as a whole is toxic. The retention in the system of the toxic agents which should be eliminated by the kidney cannot but have a deleterious effect. The amount of urine which is ordinarily passed by a healthy man in about fifty hours, as shown by experimentation, contains enough poison to kill him. The mere statement of this fact would seem to show the importance of the renal excretion.

It has been mentioned that the urine of these individuals is commonly strongly acid in reaction, and that it often

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contains an excess of uric acid. This is usually found not as free acid, but in combination in the form of amorphous urates. We may accept it as true, says Herter, "that a urine from which the urates separate gives us good reason to believe that there is an actual excess of uric acid, and that this probability is increased if the density of the urine is less than 1.025." The converse of this is not true, but when present it serves as an easy test.

Another fluid the examination of which must not be neglected is the blood. A quotation from Herter will put this better than I can state it: "We must content ourselves for the present with the knowledge that anæmia is one of the important associations, or causes, if you prefer, of excessive uric-acid output, and that this may be at the bottom of a large proportion of the chronic states we are considering. I have been surprised to find how many neurasthenics whom there was no reason to think anæmic have shown a decidedly reduced proportion of hæmoglobin. But while it is possible that we should refer to anæmia the excess of uric acid in some neurasthenics, it is more likely that in most of these cases the excess depends upon the associated disorders of digestion."[1]

It must not be thought that all these patients are chronic invalids. They frequently get better for a while, but relapse after some unusual strain or exertion. Nor must we expect to find all the different lesions enumerated in every case. Different combinations will present themselves. One very often met with is endometritis, failure of digestion, anæmia and irritation of the urinary tract, with, of course, various nervous symptoms added. In other instances, the uterine lesions and symptoms will predominate; and so on with different combinations. Still a certain family resemblance may be traced in all, enabling us to group them under one head.

[1] See New York Medical Journal, July 1, 1893, p. 10.

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What shall we call these cases? Are they cases of neurasthenia or of nervous depression? Is the trouble primarily with the uterus and ovaries, and are all the rest reflex or secondary? Or may we group them under the head of lithæmia or uric-acid diathesis?

It seems to me that we can group them under a specific head or title only with certain provisos. We might call the condition lithæmia; but in doing so we must be careful to remember that the excretion of an excessive amount of uric acid is but "one of the expressions of a great variety of nutritional disturbances." (Herter.) I object to the term "lithæmia," as in a measure begging the question. But, perhaps, with this understanding, and for want of a better, we may use the term, because it has been extensively employed, and is now getting to be understood in its proper sense. We may accept as a definition of the word lithæmia the following: A distinct disturbance of nutrition of a certain type, in which there are peculiar tendencies, one of these tendencies being the output of an excessive amount of uric acid. As this disturbance of nutrition inclines to continue and to recur in the individual, we may properly apply to it the term "diathesis." Hence the term "uric-acid diathesis." The best plan to my mind is to consider them simply as cases of general disturbance of nutrition, and then before we can claim to understand them we shall be forced to study each case, and to find out exactly, if we can, what it is that is the origin of the disturbance. The pelvic lesions may be the cause; or they may be, some of them, the result, for I believe that we must discriminate carefully in this regard. To simply treat such cases as though they were uterine or ovarian disease, pure and simple, is utterly futile; and yet the uterus and ovaries may need treatment, even of a radical nature.

We can perhaps get more help in understanding these cases by remembering the close relations which exist between the circulation of the pelvis and that of the liver; also the

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dependence of the kidneys upon the proper performance of the functions of the stomach and liver; and, again, the intimate nervous connection between the uterus and these other organs.

Let me trace out for you an imaginary course of events. Suppose that the trouble starts in the stomach, perhaps from some errors in diet, or perchance from overwork or nervous strain. This organ failing to perform its functions as it should, intestinal digestion is interfered with, and imperfectly prepared food-products are brought to the liver for its action. But, from the very fact that they are imperfectly prepared, the hepatic functions are, in their turn, impaired. As a result, the hepatic and portal circulations are retarded or interfered with, and pelvic congestion results. This congestion, particularly in the case of the uterus, will result in catarrh, and this may later become a purulent inflammation of a serious type. Many pathologists hold that there can be no inflammation without bacteria. How, then, as a result of a mere blocking of the circulation and a catarrh can a bacterial infection take place? In this way, perhaps: Bacteria in a latent state are always present in the vagina and cervix; they need but the proper conditions to spring into active life and produce their well-known effects. This condition is found in a congested uterus, whose nutrition is thus disturbed, and whose power of resistance to the onset of the germs is lowered, and which in the shape of a catarrhal discharge is pouring out the necessary culture medium. In this way a simple catarrh may be changed into a purulent inflammation.

This is not the only effect of the disturbance of digestion. Resulting from the imperfect metabolism of the food-products, many poisonous substances are formed in the system. The imperfect action of skin, kidney, liver, and bowels fails to excrete these toxins, which go on accumulating, producing an auto-intoxication. From this result many of the nervous derangements, which, in turn, tend to intensify the func-

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tional disturbances. So a vicious circle is established, always reproducing and intensifying the morbid conditions.

Another train of symptoms, often little understood, may be explained by the alteration of the character of the urine. In the paper which I had the honor to present to this Society last year I dwelt on this subject, but must allude to it again. To abnormal and consequently irritating urine, I attribute not only many of the symptoms directly referable to the bladder, but others which are not generally understood to be so produced. Its action is, in a sense, mechanical. Normal urine, which means both normal solid ingredients and a proper state of dilution, is absolutely unirritating to the healthy mucous membrane of the urinary tract. But urine which is too concentrated and which contains abnormal constituents is exceedingly irritating. This point is, to my mind, of the utmost importance, and is the key to a proper understanding of many conditions found in the pelvis. Exactly what is the irritating ingredient of this urine is not yet fully determined. Whether excessive acidity is the only thing is not certain; but, be this as it may, clinical observation goes to prove that a neutralization of this acidity by alkalies overcomes to a considerable extent its irritative qualities.

As I have already pointed out, pain in the ovarian region may be due to irritation or even inflammation of the ureters, and this irritation may be due in turn to the abnormal urine. The so-called irritable bladder has its foundation in the same condition. Urethral caruncle is but another result, and is, therefore, but a symptom of a generally diseased state.

A few words are necessary as to the methods by which the rectum may be involved in this pathological chain. The first way is by direct interference with the portal circulation, inducing congestion of the hemorrhoidal veins, and, later, hemorrhoids. Constipation is another factor, and is a direct result of the interference with digestion, often aided, as I shall try to show, by improper dress. Another cause

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of constipation may be found in reflex spasm of the sphincter muscle, effectually locking up the rectum. This may be preceded or accompanied, in some instances, by hyperæsthesia of the rectal mucous membrane, which, in turn, may result from pelvic congestion. A backward displacement of the uterus is a frequent cause of constipation, the uterus acting like a ball-valve. We must be careful, however, not to place too much reliance on the mechanical theory. Again, the passage through the lower bowel of undigested, and, therefore, often fermented and irritating food, will often produce untoward results. In fact, as in the case of the bladder, this may be an instance in which diseased conditions in one organ may alter the secretion of another, and thus indirectly through reflex action induce new pathological changes in a third.

Such, then, may be the course of events in one of the cases which I have in mind. I have supposed that the trouble began in the digestive tract. This is not always, nor even often, the case. Frequently the digestive disturbance is a reflex, the point of origin being in some distant organ. I have a number of times found the starting-point to be in the eye, some error of refraction or a muscular disturbance. This may explain in a measure the not well-understood relation known to exist between the eye and uterine disease. To claim to cure uterine disease by means of glasses may seem far-fetched, but I am sure that I have seen cases in which the correction of eye-strain was at least a prerequisite to improvement.

Again, the original source of disturbance may be in the uterus itself. A lacerated cervix, a displacement, or even an endometritis, may readily be the starting-point. The digestive and nutritive disorders follow as a result of nerve reaction, and produce various symptoms in organs distant from the pelvis. Beside the general roundabout connection thus shown to exist between the kidneys and uterine disease, I have sometimes thought that there was a more

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direct relation. This is only speculative; but it has occurred to me that there might be a direct inhibitory influence exerted from the uterus as a centre on the function of the kidneys, so frequently have I found uterine disease, especially endometritis, associated with renal insufficiency. As any link in a circular chain may be the first to give way, so almost any of this series of disturbances may be the first. Sometimes the defective link will be determined by inheritance; often by accident, especially the accidents of child-bearing; and, again, by abnormal environment.

If we seek for special causes, we will find them on every hand—climatic, dietary, social, the wear and tear, the hurry and rush, and the fatigues and strains of modern life.

One point more in the way of causation I wish to dwell upon, and that is the influence of dress.[1]

It does not seem to me that the profession has taken sufficiently strong grounds on this very important matter. Beyond an occasional explosion against corsets and tight-lacing, comparatively little has been done. A few men have been working at the problems involved, but they seem to have made little impression upon either the profession or the public. Now it has been proved that displacements, not only of the uterus, but of all the abdominal viscera, may result from only moderate waist constriction. "It is not tight-lacing which does the great majority of civilized women injury, but a dress which fits the form so snugly in the narrow zone of the waist that the increased thoracic space demanded for respiration can be secured only by a downward displacement of the viscera to an abnormal extent."[2]

This is the key to the whole matter, and no understanding of the harm done by improper dress can be had unless

[1] I am indebted to a paper, entitled "The Relation of Static Disturbances of the Abdominal Viscera to Displacements of the Pelvic Organs," by Dr. J. H. Kellog, for many ideas on this subject.

[2] *Loc. cit.*

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it is kept carefully in mind. Not only may snug-fitting dresses do harm, but loose-fitting waists if confined by a snug belt are just as bad.

The displacements referred to are much commoner than is generally supposed. The stomach and large intestine are displaced with marked frequency. If those who are doing abdominal section will observe, they will soon learn the truth of this. Since my attention was called to it, I have seen the stomach below the umbilicus. The large intestine I have found to be almost constantly below its normal level, and I once saw it in front of the uterus. You are all familiar with the great frequency of floating kidney. Now comparative observations have shown that these displacements are much more frequent in women than in men. For this there must be some cause. Further observation shows that this is limited to civilized women, and, moreover, that men who practise waist constriction, as blacksmiths—who generally use a belt instead of suspenders—give about the same proportion of visceral displacements as women.

All this goes to prove, as has already been indicated, that improper dress is the cause; and a careful study of the dynamics of waist constriction will soon convince anyone of the truth of this proposition. It was formerly taught that the function of respiration is not performed in women in the same way as in men. In women natural respiration, it was asserted, is mostly costal, while in men the whole abdomen and chest walls move together, the greatest degree of expansion being over the line of the floating ribs. Later investigations have proved that among individuals, or even among whole races, where the clothing does not interfere with the respiratory effort, respiration is performed in women exactly as it is in men, agreeing with the description already given.

If this is true, then we can easily see that the present mode of dress among civilized nations, changing as it does the mechanics of so important a function as respiration, must have a marked influence on the contents of the abdominal

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cavity. If you doubt the prevalence of waist constriction, apply the following test to the women whom you meet in your consulting-room: Put a tape measure around the waist outside the clothing, and note the difference in size between forcible expiration and inspiration. More than half the women will be unable to show any expansion at all; about one-third will move the tape a quarter of an inch; while one in twenty-five, perhaps, will move it nearly an inch. Experiments have proved that men can easily change their waist measurements from two to three inches, or more, by forcible expiration and inspiration.

You can thus readily see that respiration, especially if forced, as in taking exercise, in a woman with the lower part of her thorax and waist encased in an unyielding garment—remember a smooth-fitting dress is enough—must exert an immense downward pressure on the abdominal contents. This is only partly compensated for by the unnatural and excessive development of costal movements. This pressure will be propagated, aided by improper attitudes—lolling in a rocking chair, for example—to the pelvic viscera, and mischief be worked thereon. While this alone may not be able to cause a retroversion, for instance, it can push the uterus forward and downward, and is the cause, I am convinced, of the anteverted position which many have come to consider the normal position of that organ.

It is outside the scope of this address to consider either prevention or treatment. But this much I must say: It seems to me that the profession has a great and much-neglected duty to perform in the matter of woman's dress. Nothing will ever be accomplished until the whole conception of what constitutes a beautiful female form is entirely changed, and the popular ideal is made to conform to the lines of Nature and true art. The average woman of to-day has a figure no more like the figure that Nature meant her to have than has a Chinese belle a natural foot. One is as far from the truth as the other, with the advantage on the



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side of the Chinese, that the foot constriction does not begin to work the harm that is done by the constriction of the waist.

A "campaign of education" is needed, and physicians are the ones first to be instructed. It may be objected that if improper dress is capable of doing so much harm, how is it that women do not suffer more than they apparently do? I can only answer that it is because of the great powers of resistance implanted in the human organism, the ability to resist all sorts of unfavorable environment, which is characteristic of man more than of almost any other animal, and because "several pathogenic conditions are necessary before disease can be produced."

Now, to return to my main argument. It must be admitted that displaced organs cannot perform their functions as well as when they are in their natural places. The stomach, for example, cannot empty itself, and the peristaltic motion of the intestine is interfered with. If this be so, then improprieties in dress may be put down as one of the frequent causes of the disturbances of the digestive organs, which result in the series of mordid phenomena which I have attempted to describe.

Again, improper dress may exert a deleterious influence on the digestive functions by at least assisting in the causation of some recognizable uterine disease, such as a displacement, this, in turn, interfering with the digestive processes by reflex action. By interference with proper exercise and muscular development, the general processes of nutrition are disarranged, and so another count is laid at the door of dress.

It may be objected that the subject matter of this address is almost purely theoretical and is not based on clinical facts. In answer to this I shall say that my conclusions have only been reached after careful study, and after putting these theories to practical test in the hospital-ward and in the consulting-room. I regret very much that time prevents the report of cases, many of which I could cite to prove the

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correctness of these views, and also that I shall be unable to discuss methods of treatment. I must leave you to draw your own conclusions in this regard.

Why have I called your attention to this class of cases? They are perhaps not strictly gynecological, but they are in my experience the patients who haunt the consulting-rooms and private hospitals of the gynecologists. They suffer from pelvic pains and backaches, which they have been taught mean womb disease. The disturbance of menstruation and vaginal discharges, almost constantly present, still further direct their attention to the uterus, and they are convinced that all their troubles come from the womb. An examination perhaps shows that this is, in part at least, correct; but more often only a slight leucorrhœa and a little erosion around the os is discovered. If the practitioner into whose hands the patient has fallen is ignorant or dishonest, he will keep up the delusion, and go on treating her locally indefinitely. If he is one of those specialists who sees nothing outside of the pelvis, and nothing in it but the uterus and its appendages, he will apply the curette for the endometritis, or perhaps remove the ovaries for dysmenorrhœa. The curetting may do good, but alone it will not be apt to cure; nor will this be accomplished until the original cause and all the causes of the woman's condition have been looked for and removed.

We must remember that the human organism is a wonderfully complex affair; that, like a delicate and finely made watch, every wheel, spring, pivot, and screw must be in place and accurately adjusted in order that the mechanism may properly perform its appointed work.

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# THE RENAL CATHETER AND ITS USES IN THE DIAGNOSIS AND TREATMENT OF RENAL DISEASES.

By Howard A. Kelly, M.D.,
*Baltimore.*

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I need not dwell at length upon the advantages of passing a catheter up the ureter and into the renal pelvis at will and without difficulty, for any one at all familiar with urinary diseases will at once call to mind cases of fluid accumulations within the renal pelvis which might be emptied in this way, of strictures of the upper ureter, especially at the pelvic junction, to be diagnosed and passed, and of soft malignant tumors to be differentiated from sacculated accumulations, and possibly the recognition of the presence of calculi.

As gynecologists you will think, too, of cystic kidneys which you have mistaken for ovarian or other tumors. I recall two of my own cases in this connection, one where I mistook a large kidney for an ovarian tumor, and one where the diagnosis between a renal and a large pancreatic cyst remained doubtful for some time.

I have found it possible to make a substantial addition to our means of diagnosing and treating these diseases by means of my renal catheters, which I wish to present on this occasion.

The renal catheters are made of silk or linen 50 cm. (20½ inches) long, and vary from 1½ mm. to 3 mm. in diameter. The sizes are 1½, 2, 2½, and 3 mm. Sizes between these, varying but one-fourth millimeter are being added. The end of the

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catheter forms an obtuse cone about 2 cm. long, with a large oval eye at the base. The catheters are first coated with varnish, sometimes as many as twenty to thirty layers thick, and are then sandpapered; after this treatment they are re-coated and dried in an oven. Wire stylets are used during the introduction when the catheter is warm and flaccid. These catheters must be carefully protected, on account of their delicacy, and still more on account of the danger of contamination and subsequent infection of another patient. I preserve them in bulk in large glass tubes, 3 cm. in diameter and 60 cm. (24 inches) long, plugged at the ends with cotton. Single catheters for immediate use are kept in small glass tubes 8 mm. in diameter and 60 cm. (24 inches) long; these are also plugged with sterilized cotton and kept in sets in a canvas case.

Renal catheters, 1⅔ to 2 mm. in diameter.

The catheters are sterilized by washing them first with warm water with a syringe, and then with a 1 to 1000 solution of bichloride of mercury, followed by a final rinsing with water. The catheter is then wiped dry and put on a shelf for several days, until dry inside as well, when it may be placed in a glass tube plugged with cotton. To make them stiff enough to pass easily into the ureter they must be kept cold. I put mine in the ice-chest for an hour before use.

To introduce the renal catheter, the bladder is emptied, the patient placed in position, and a No. 8, 9, or 10 cystoscope passed, to bring the ureteral orifice into view. The assistant then takes up the glass tube holding the catheter, draws out the cotton plug, and with a rod pushes the catheter so that the point projects a few centimetres beyond the glass. The point is dipped in sterile boro-glyceride and the tube laid on the operator's opposite shoulder—left shoulder for right ureter, and right for left. With thumb and forefinger protected by

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sterilized cots, the examiner takes the point, draws it out, passes it through he speculum, engages it in the ureteral orifice, and gently but steadily pushes it on up to the kidney. The advance is usually easy until it touches the top of the renal pelvis, curves over and strikes the kidney, when it refuses to go further. The cystoscope is then carefully withdrawn, so as not to pull on the catheter or scrape it. From 15 to 20 cm. (5 or 5½ inches) of the catheter hangs outside the ureter, making the distance from the external urethral orifice to the top of the pelvis of the kidney about 33 cm. (13 inches).

The catheter holds about 1 c.c. of urine, and by the time the lumen is filled from the kidney the flow begins in intermittent drops from the normal kidney, in a steady stream from an obstructed pelvis. If suction is applied at the end of the catheter, the flow starts much sooner, and if it is thick and purulent it may be started in this way when it would not otherwise start at all.

By covering the outer end of the catheter with a little film of water, a telltale is formed to reveal the progress of the coming urine, which blows out a little bubble.

To get uncontaminated urine for a bacteriological examination the end of the catheter must be covered by a short sterilized rubber sleeve before introduction. When introduced the sleeve is drawn off and the end put in a sterile glass tube closed with cotton.

I use a block of wood bored obliquely with an auger hole to hold the tube in the bed while the urine is running.

To illustrate some of the uses of the catheter I cite four cases:

Case I.—Miss F., a patient of Dr. Butler, of Roanoke, Va., had a sinus several years old, discharging pus, just under the left anterior superior spinous process. Previous to coming to me she had been in a hospital in Richmond under treatment for supposed Pott's disease.

By passing in a renal catheter I found out these two facts:

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First, that the catheter on the left side entered 27½ cm. while on the right side it entered 30 cm.

Second, on the right side the urine flowed actively through the catheter, but there was no flow whatever from the left side, even after leaving the catheter for an hour.

I concluded from this that there was a complete obliteration of the upper end of the left ureter, and I cut down into the flank in the position of the left kidney, opened and scraped a caseous mass, and drained an abscess. The patient recovered, and has since married.

CASE II. I owe to the courtesy of Dr. F. Henrotin, of Chicago.

Mrs. S. had an intermittent pyonephrosis with severe renal colic.

The renal catheter located an obstruction at the junction of the ureter with the renal pelvis, and I demonstrated by cultures from the uncontaminated urine that there was a colon-bacillus infection of the left side. The right side was shown in like manner to be sound. The comparative examination of the urines from the two kidneys showed the percentage of urea to be l. : r. = 7 : 9.

CASE III.—A colon-bacillus infection of the right renal pelvis due to stone was diagnosed by the renal catheter, and minute pieces of stone were brought down by forcible suction and washing. Nephro-lithotomy was performed, followed by cure of the pyelonephritis.

CASE IV.—Pyelonephritis; high fever, intense pain, rapid pulse. The renal catheter was passed and 280 c.c. of thick creamy pus were drawn off from the pelvis of the left kidney; after this the kidney was washed out through the renal catheter. The patient recovered, and went home well. She now returns periodically to have the washing repeated. She has no pus and no distention of the renal pelvis.

In the same case a hydronephrosis of low grade has been diagnosed by the renal catheter on the right side, and is under treatment.

CONCLUSIONS. By means of the renal catheter I have been able

1. To locate exactly the position of a stricture in the upper ureter and at the uretero-renal junction.

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2. To test the permeability of such strictures.

3. To relieve accumulations above these strictures, whether in the ureter or in the kidney.

4. To diagnose hydronephrosis of a grade hitherto unrecognized, where there is no perceptible enlargement.

5. To diagnose pyelonephritis.

6. To differentiate between hydronephrosis and pyelonephritis.

7. To differentiate a soft malignant disease of the kidney from a fluid accumulation in its pelvis.

8. To determine the exact nature of an infective pyelitis.

9. I have also diagnosed stone in the kidney by bringing away fragments not found in the voided urine.

Finally, the renal catheter is of value in testing renal diseases—

1. By evacuating any accumulation in the renal pelvis at regular intervals.

2. By washing out the renal pelvis so that an infection may be reduced or entirely relieved.

3. By dilating a stricture and so decreasing the subsequent accumulations above.

4. By making possible an accurate diagnosis of kidney disease, so that an operation may be determined upon, postponed, or given up, according to the indications.

## DISCUSSION.

Dr. Paul F. Mundé, of New York.—I would ask how often Dr. Kelly fails to introduce the catheter into the ureter—either one or both?

Dr. Kelly.—Were it not for a single case in New York, I would say never; but, in spite of that I shall say never, anyway, for I did not have the proper conditions for introducing the catheter on that occasion. The only available light was an argand burner, which could not be held satisfactorily.

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If the patient is nervous, I do not always insist on catheterizing her at the first examination, if the slightest difficulty is experienced. I advise beginners to use an anæsthetic often in their ureteral work.

Dr. Mundé.—I would ask another question, also for information: Is it not possible to pass the ureteral catheter without the aid of a speculum, but using the finger introduced into the vagina as a guide? I have tried the speculum and have been disappointed at seeing how little light is thrown into the bladder.

Dr. Kelly.—I would like to demonstrate some of my cases to Dr. Mundé, and I hope that I may have an opportunity before he leaves. I shall never again pass the catheter in the old way, by fishing, or by tactile sense alone. It is far more difficult and uncertain than the new method, and it is liable to injure the bladder. Examining afterward, you will find that you have invariably torn the mucosa and left bleeding areas, and just those cases are most liable to bleed in which it is most desirable to enter the ureter. If you once use the speculum and catheterize the ureter you will never again try to introduce the catheter in any other way.

Dr. S. C. Gordon, of Portland, Maine.—In introducing the catheter by free hand, is there not much more liability to infection?

Dr. Kelly.—There is. We may by that method infect the ureter, but I have never seen any ill consequences from catheterization through the speculum. The most that I have seen have been three cases of ureteral fever. One patient had quite high fever, with chills, lasting two or three days; but she got over it, and I went on with the treatment, washing out the ureter and kidney. In one case there were several attacks of fever without harm.

Dr. A. J. C. Skene, of Brooklyn.—I only want to say that I have been contented to follow Dr. Kelly, and I think that the great discovery which has been made in this manner of examining the bladder and the ureters renders it so much easier. I cannot understand why it took him so long to find out so valuable and simple an improvement. It only goes to show that all good things are very simple, and we always say, "Why

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didn't we think of this sooner?" I have found that, in addition to the examination of the bladder and ureters by the Kelly method, catheterizing the ureter has become much simpler, and many of us who made poor work of it by the old method can, I think, now succeed many times. The trouble is that the operator hardly sees a sufficient number of cases to become expert in these examinations. I may be all wrong, but there is one point which I would like to make, and that is in reference to making sure that we are not contaminating a healthy ureter or a healthy kidney during the examination. I am sure that no one can add anything to the aseptic and antiseptic care which Dr. Kelly has taken and so completely described; but I have found that the difficulty is not in keeping the instrument clean, but in all those conditions which will insure a certain amount of septic material in the bladder at the time of exploration, where you have one healthy ureter or kidney and another one diseased, in keeping the healthy ureter perfectly free, so that you will not have septic material in it. I did not hear the whole of the doctor's paper, and if he described how to do that I wish that he would repeat it. If not, I may say that in addition to thoroughly washing out the bladder, which is not sufficient, when the ureter is exposed I also bathe the region around the mouth of the ureter, but I have also washed it out, so that I would be sure not to carry in any septic material.

Dr. Bache McE. Emmet, of New York.—I would like Dr. Kelly, in closing, to state in what proportion of cases he has found disease of one kidney only, and for how long a time it had existed. Also, whether the function of the healthy kidney was increased in proportion to the diminished function of the diseased one. I have no doubt that this method will lead to the clearing up many obscure cases.

Dr. Archibald McLaren, of St. Paul.—In answer to Dr. Mundé's question, while my own experience has been very slight, I may say that it has required only a few minutes to catheterize both ureters through Kelly's speculum. The method has given me much satisfaction. I have used only the short silver catheter.

Dr. J. M. Baldy, of Philadelphia.—Regarding the failure in

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New York, I would emphasize the point that the whole question is one of light. With a good light any man can catheterize the ureters by this method. If he fails, it is on account of a poor light. If one who has tried it with the argand burner will use an electric light with a head mirror, he will be astounded at the difference.

THE PRESIDENT having been requested to speak, said that his ureteral work had run in rather a different direction from Dr. Kelly's. It had been more on the medical side than on the surgical, although he had used the catheter to a considerable extent. He had not had experience with passing the long catheter into the pelvis of the kidney, and he was, therefore, unable to add anything to this discussion. It was a subject of a great deal of importance, and the Fellows were much in debt to Dr. Kelly for having brought it before them to-day.

DR. KELLY.—As to the light, the important point is that it should be a strong one. A head-mirror of good size is necessary, so that if you move the head a little you will still have the light; if there is but one little pencil, as from a small mirror, you will have difficulty in keeping it directed into the bladder. There should be a strong light, a good mirror to reflect it, and as little angle as possible between the pencils of light going to and from the mirror; if there is a large angle, it is extremely difficult to keep the light in the proper direction; that is the trouble with the argand burner. The electric headlight gives no trouble, and on a bright day there is no difficulty in using daylight.

As to the catheter. The metal catheters have been useful, both to catheterize and to drain the ureter, and will always have a place, but for all ordinary purposes the flexible silk catheters which I have had made are the best; they are easily introduced, are about thirty centimetres long, and reach up over the pelvic brim; after introducing them one can turn the patient over without any danger of the catheter coming out or of wounding the parts.

Regarding the relative frequency of bilateral and unilateral disease of the kidneys, that is variable. I have found in many instances one kidney doing excessive work and remaining perfectly sound. I think that the practical point here is that we are

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inclined to over-estimate the importance of a little disease on the other side, for when patients die of renal disease we are astounded to learn that they had been able to live so long with the advanced disease found in both kidneys. There is a patient at the hospital from whom about two weeks ago I removed an enormous suppurating kidney. It extended from the ribs down to, and filled, the false pelvis. The patient was passing urine containing albumin and epithelial casts from the opposite kidney. In spite of that she is getting well. (Has since gone home.) I could recite similar cases in which the kidney most extensively diseased was removed and the patient recovered, although the other was not sound.

As to preventing infection, that subject was not really intended to be a prominent part of my paper. The ureteral orifice should be cleansed with boric acid solution before catheterizing, and the speculum carefully wiped. The great danger lies in contamination of the catheter itself, which must not be handled with unclean fingers.

Dr. Davenport presented for Dr. Edward Reynolds, of Boston, some block-tin ureteral catheters, with which Dr. Reynolds sent the following communication:

These catheters were originally intended to be used in outlining the position of the ureters during cœliotomy. I have had but one opportunity of using them for that purpose, but on that single occasion found them excellently adapted to their purpose. They have proved, however, so much more convenient than rigid catheters that I have fallen into the habit of using them in all cases in which I catheterize the ureters by sight. The point in which I think they excel is as follows: In the use of the ureteral catheter as a preliminary to hysterectomy it is essential, and in ordinary catheterization of the ureters it seems to me an advantage that the catheter should follow the natural curves of the ureter instead of displacing it, as any rigid instrument must. But no other flexible instrument with which I am acquainted can be introduced in a flexible state, *i. e.*, without being rendered rigid by a stylet. Indeed, the block-tin catheter itself has proved too flexible for unaided use, but when it is furnished, as are these

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which I present, with a stylet which enters into it for a little more than half its length, it is as a whole sufficiently stiff to be introduced with as much ease as the rigid Kelly instrument, while its distal portion is still so flexible as to follow the curves of the ureter.

In ordinary catheterization for diagnostic purposes the portion of the catheter which is rendered rigid by the stylet does not necessarily enter the ureter, but when it is desired to pass the catheter above the brim of the pelvis, as, for instance, when it is to be used as a guide during hysterectomy, I have found the following manœuvre convenient: At the time when the operator sees that the rigid portion of the instrument, *i. e.*, that which contains the stylet, is entering the ureteral orifice, he holds the cystoscope and catheter immovable, while an assistant withdraws the stylet for about half its length. An additional three, four, or five inches of the catheter are thus rendered flexible and allowed to conform to the curves of the ureter. I have used it many times, and it appears to me to combine the advantages of the rigid and flexible instruments. I ought to mention that I owe the original idea of the use of block-tin for this purpose to Dr. H. L. Burrell.

[These catheters are made by and can be obtained of Codman & Shurtleff, Boston.]

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# FURTHER EXPERIENCE AND OBSERVATIONS IN HYSTERECTOMY FOR FIBROIDS.

By S. C. Gordon, M.D.,
*Portland, Me.*

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Two years ago, in a paper read before this Society, I used the following language: "I fully believe that if it were the rule in every case of fibroid of the uterus to make hysterectomy before the patient was exhausted by hemorrhages, peritonitis, salpingitis, and consequent invalidism—in short, if we operated upon all cases in the early stages, as we all advise for cystoma of the ovary—that our mortality would be no greater, and at the end of a year we would have a much greater sum of human happiness and relief to physical suffering."

This and other papers on the same subject gave rise to one of the most animated, exciting, and interesting discussions in the whole history of the Society. My friend, Dr. Mundé, severely criticised my position, and declared that in his own experience and practice only about "ten per cent. of the cases he had seen required treatment" (presumably surgical treatment). Further on in the discussion he says: "In my opinion at least seventy-five per cent. of these do not require an operation, or, indeed, any surgical treatment."

Fortunately for the credit of the profession, as I believe, the large majority of those who took part in the discussion did not indorse Dr. Mundé's views, while many, and notably those of large experience, more nearly approved the position I assumed in my paper.

The general sentiment was in favor of removing all uteri

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containing fibroids that had given the woman sufficient trouble to cause her to seek relief. The great point of difference was as to what would really be the degree of suffering to justify surgical interference.

Believing now, after two years of much larger experience, that any discovered fibroid may soon or late become a source of trouble and the foundation for invalidism, I honestly and conscientiously adhere to the position then taken. I have steadily and uniformly followed the practice of the principle then laid down, and have seen no reason to regret it. In every case in which I had the consent of the patient I have made hysterectomy, and in a large majority of the cases complete hysterectomy, as advocated in a paper read before the American Medical Association in 1892, entitled "Hysterectomy without Pedicle." The more I perform this last operation (complete hysterectomy) the better satisfied I am with the results. I rarely have unpleasant complications afterward. In several very recent cases, where I have removed the entire cervix, there has been an uneventful recovery, with scarcely a rise of temperature. However little of the cervix is left, there will always be more or less danger from septic material in the cervical canal, and although one may cauterize by the very best methods, pus may result. Again, I do not close the vaginal opening so completely as to prevent serous drainage between the sutures; and inasmuch as I rarely use drainage in any other form, I am sure that this proves sufficient. In all cases the utmost care is taken before operation to render the vagina as aseptic as possible. I also instruct nurses to use a douche (1 to 5000 bichloride) every day so long as a discharge continues. Within the past year I have had no death from hysterectomy for fibroid of the uterus—about twenty operations in all; nearly half have been complete, in the others some portion of the cervix has been left. The difference in rise of temperature, pain, and other complications has been very strikingly in favor of complete extirpation. The principal objections, heretofore, have been the increased length

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of time required to perform the operation, but my own experience confirms me in the belief that but little more time is required now than was formerly demanded in the partial removal. Having the complete removal in view at the commencement, one can save much time that was formerly spent in minor details of a different operation.

The difficulties of any hysterectomy come largely from complications that have arisen from delay, and this is especially true in making the complete removal. No uterus can long remain normal that contains a fibroid. Septic material may, and frequently does, extend into the Fallopian tubes, thence into the pelvic cavity, where peritonitis results in suppuration, exudate, and adhesions that bind down the cervix, so that it becomes almost impossible to enucleate or dissect it out. This I have found a frequent complication. Fibroids become multiple, occupying all parts of the uterus, and extending into and changing the position of the broad ligaments, displacing the uterers, and fixing portions of the intestines by contact with the congested peritoneum. The whole circulation is modified and becomes pathological, the veins of the broad ligament are varicose, the tissues become friable, increasing the danger from hemorrhage during the process of removal. To my mind, the chief danger in long operations lies in the amount of blood lost, rather than in any shock to the system otherwise. "Death from shock," when analyzed, as a rule, means death from hemorrhage. I speak from my own experience and observations of other operators. It is not a mere theory I have formed, but comes, as all theories in practical surgery should come, from practical work.

It is often said, especially by men who take what they term the "conservative" side of treatment of fibroids, that in a majority of cases the patient goes through life and is not rendered an invalid by the growth, but enjoys a degree of health and comfort that the average woman enjoys. Most careful and searching inquiry, on my part, among such women shows the reverse of this to be true. First of all, the knowl-

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edge of such an unnatural growth is a constant source of anxiety and worry of mind, which is worse than physical suffering. The dread of some complication is always before them, to say nothing of the disagreeable deformity that they cause after they are large enough to rise above the pubes. In the case of an unmarried woman this last-named feature becomes exceedingly annoying. Add to this the well-marked invalids who barely exist, unable to take life's burdens and cares or even to be free from daily suffering, and we have a factor that weighs much against the slight risk of hysterectomy.

Homans, in an article published in the *Boston Medical and Surgical Journal*, March 7, 1895, speaks more strongly than ever before in favor of the operation. He gives eleven reasons why he advises operation, while practically he presents but one reason for not operating—viz., when the tumor gives no trouble, uneasiness, or disturbance, and the patient does not desire the removal. The last part of this reason always settles the matter, while the first part, in my experience, is extremely rare. He adds, "but I operate more frequently than I used to." Out of six hundred and fifty fibroids which he had seen he operated upon ninety-three; but he says, "I should have done well to have operated upon a greater proportion of them." He estimates that the "mortality from all cases, promising and unpromising, varies from three to ten per cent."

Following the rule which I have laid down, "to operate on all cases as early as discovered" and by "*complete hysterectomy*," in my opinion, the mortality will be no more than the minimum—three per cent. Can we ask more than this for abdominal section for any cause?

Left until an absolute necessity compels the operation (as claimed by our "conservative"(?) friends), we shall find a mortality far exceeding the minimum, to say nothing of the dangers from death by hemorrhage and peritonitis, and the years of physical and mental suffering. There will always be a certain percentage of cases that will undergo malignant



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and other degenerations and develop complications that will render impossible any attempt even at removal.

The size of a tumor is by no means the measure of the suffering that it may occasion, the largest oftentimes being less troublesome than small ones. I have within a few weeks removed a uterus containing two fibroids no larger than acorns. They had caused hyperplasia of the corpus uteri and a complete and very sharp retroflexion. The woman had been an invalid for years and I proposed ventro-fixation to relieve the displacement, to which she assented. Exploratory incision showed the true condition and I performed hysterectomy. I have no doubt of its complete success so far as restoring her to health and comfort. Another case, a week later, showed three very small tumors so placed in the pelvis as to render an operation very difficult and dangerous. Pressure upon the uterus had produced much atrophy of the organ, its functions had become considerably impaired, and the lady had been an invalid to the extent of being deprived of all social privileges and enjoyment for many years. Yet the largest of these fibroids was no more than two inches in diameter. Rapid and uneventful recovery followed. I have no doubt as to complete recovery of health in this case. These are only samples of many such cases that occur under the eyes of frequent operators.

As this paper is merely a brief summing up of my own experience, I forbear quoting at any length from authorities. The journals are full of articles bearing upon the subject. Homans says: "I doubt if one man could read in a day the communications published during twenty-four hours on this operation." All this shows the manifest interest in the subject. The profession seem fully awake to it, and hasten to put themselves on record in favor of, rather than against, surgical interference. Judging from all these indications, one must be led to believe that hysterectomy for uterine fibroids, as a rule, has come to stay, and that a much greater percentage than "ten" will be removed in this way, whether it is best or

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not. If the "education" in this direction does not result in tempting men who have not had experience in abdominal surgery for other causes, many a suffering woman will be relieved.

That the operation is much more difficult than abdominal cases generally, I think, will be readily granted by men of large experience. Especially is this true in cases of long standing, where adhesions and complications exist—then, indeed, it becomes actual manual labor. Almost every man has his own method of operating. I have never changed mine since I adopted the *continuous suture with catgut* about twelve years ago. So far as I know, no one who has written on the technique of the operation has ever adopted this method. Most men seem afraid of the catgut suture. Since 1884 I have used no silk, silver wire, or any form of suture or ligature, aside from catgut, in the abdominal cavity or out of it, with the single exception of silkworm-gut for closing abdominal wounds. I have never regretted its use, and have had, in my opinion, no unpleasant results, which would not have occurred with any other form of suture or ligature. With well-prepared catgut I feel the utmost safety both as regards asepsis and freedom from hemorrhages after operation. It has a special advantage over many forms of ligature, in that you can use it freely by continuous suture where the same amount of silk would be a great objection. In this special operation after placing a long clamp beneath the ovary and tubes, with a strong curved needle threaded with No. 4 or 5 catgut, I ligate a portion of the broad ligament an inch below the clamp, carefully fastening by over-and-over sewing this part. I then cut between the clamp and ligature, and as fast as I cut continue the over-and-over suture, always keeping one loop ahead of the knife or scissors. In this way I close the broad ligament as soon as cut. When I have divided the broad ligament down as far as the uterine artery, and before cutting it, I carry an incision around the uterus in a line with the last suture, through the peritoneum, which I dissect off

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both in front and behind, continuing the suture as before—this includes the uterine artery, and no blood is lost in the average case, where the tissues are not impaired in their integrity. A little care and patience soon relieves the cervix, and by that time the continuous suture has nearly closed the vaginal opening, so far as I care to do so.

As I said in a former paper, I have tried the various other methods of hysterectomy, but at last settled on this, which I find much easier than any other I know at present.

The advantages I claim for it are: 1. In my hands it is easier to do than any other method. 2. By using catgut one has less fear of strangulating the tissues, on account of its elasticity. 3. By the continuous suture one can always have the bloodvessels under control, by carrying a loop of the suture below the point of division before cutting the vessel. 4. If tissues are weak and fragile from inflammatory action, the catgut suture can be used in any direction to almost any extent; in the event of annoying bleeding. 5. Absorption of catgut always takes place, so that there is much less danger from subsequent fistulæ, which so often occur when silk is left in the pelvic and abdominal cavity. 6. In my experience, no casualties have followed its use that may not have followed the use of any kind of suture.

Many operators can possibly remove the uterus more rapidly by their own methods, but the time necessary to secure all bleeding vessels and to complete the toilet will make the entire operation as long as mine. When I take my last suture the vessels are all secure and the rest is rapidly finished. I have seen the uterus removed in ten minutes, but from half an hour to an hour was spent in getting the patient ready for bed. This I call "playing to the galleries," and is not scientific surgery. I find very little trouble from prolonged operations, provided that hemorrhage is avoided and prevented; with plenty of gauze and hot towels the intestines can be kept warm, and no shock follows from even hours of exposure.

In conclusion, I can only say that further experience and

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careful observation justify me in reasserting my belief, so strongly expressed two years ago, that in all cases in which a woman finds herself an invalid from a fibroid uterus to the extent of seeking the advice of a surgeon, unless such tumor can be safely and easily removed *per vaginam*, either by enucleation or morcellement, true conservative surgery demands hysterectomy, and, in my experience, I have found the abdominal method by far the preferable one.

I expect criticism upon my method of operating by continuous suture with *catgut* as the material. I think I may safely say that it is entirely original with me, and therefore I am perfectly willing to submit to whatever discredit attaches to the method. It has served me well for at least ten years, and several of my friends in the profession are abundantly satisfied with it.

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# THE USE OF TRACTION AND MORCELLATION IN THE REMOVAL OF FIBROIDS *VERSUS* HYSTERECTOMY.

By Thomas Addis Emmet, M.D.,
*New York.*

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The method to be described for treating fibrous growths of the uterus by traction and morcellation is one as yet but little known to the profession, notwithstanding that it has been practised in this country by myself for many years.

Although the subject is limited to a special mode of treatment, it is earnestly hoped that the discussion on it may be so directed as to determine within a reasonable limit the circumstances under which the uterus should be removed. I bring forward the method with the firm belief that, if properly practised, it will be the means of greatly reducing the number of cases in which total extirpation would be resorted to if we could not have the benefit of such a procedure. We are yet in a transition state, when the tendency is always to run to one extreme or the other. But experience has long since taught me that the truth seldom lies in either extreme. Consequently I would no more accept the view that the uterus should be removed, from the fact that a fibroid exists, than I would condemn the operation with the dictum that it should never be performed.

Unfortunately the operation for removal of the uterus is not, under ordinary circumstances, one difficult of execution; were it otherwise, it would not be so necessary, in attempting to check the abuse, that the public opinion of the

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profession should not only be heard at this stage, but heeded. The abuse is due to the enterprising spirit of different members of the profession seeking for what is thought by them to be progress, but, owing to the extreme views held, the result is frequently malpractice. In the name of such progress the uterus is being removed for procidentia, for different forms of prolapse of the vaginal walls, and it is but a few weeks since I saw a young woman, then a hopeless invalid, whose condition was caused, during the past winter, by the removal of the uterus, tubes, and ovaries, for the reason that she had not been relieved after an attempted operation for laceration of the cervix! Further comment is unnecessary.

Almost every operative procedure in surgery has within a limited space a legitimate place, and when needed it should be performed. If we grant this proposition to be true, we must hold that when an operation is performed unnecessarily it is malpractice.

To remove the uterus in consequence of the existence of a fibrous growth, from which the woman may have suffered but little, is not, in my judgment, justifiable. To extirpate the uterus before thoroughly exploring the uterine canal is equally reprehensible. Frequently a secondary growth projecting into the canal is the immediate cause of the loss of blood, and, until an effort had been fairly made to aid the advance of the growth for its removal, it is impossible to decide as to what the exigencies of the case might require. And, lastly, the most important point of all to determine, after locating a uterine tumor, is in reference to the rapidity of its growth. I exclude the tendency to loss of blood, as it presents the least urgent symptom or need for the operation of removal of the uterus, since it is possible, with the proper surroundings, to hold this in check for an indefinite period. It is but reasonable that this delay should take place whenever the slightest prospect of a good result exists. We shall not discuss the death-rate after removal of the uterus for a fibrous tumor, as this can doubtless be made more favorable,

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but we shall consider the condition of those who survive as offering the chief objection to the operation under any circumstances but the most urgent. We have reached a stage in the history of this operation at which the testimony must be heard of those who have to take charge of the cases after the surgeon has already received full credit for a supposed successful operation. Their testimony would be that too large a proportion of these women remain invalids after the uterus has been removed. This has certainly been my experience in the case of the patients of other operators under my care, and instances have occurred in my own practice where I had felt the operation was called for, but the result afterward has shaken my confidence. I have indeed seen remarkably good results, but with many I have been in doubt as to the gain in getting rid of one set of symptoms by the substitution of others entirely new in character, and which are often attended with even a greater degree of invalidism.

Sometimes as a cause of their suffering we may find among these women a certain proportion with more or less sagging of the roof of the pelvis, while others suffer more from prolapse of the bladder, of the urethra or of the whole vagina. So long as we are thus able to detect any abnormal condition we can at least be encouraged by the hope of being able to afford relief. But, unfortunately, there remain a number of women who continue invalids from some unknown cause after the uterus has been removed, as no special lesion can be detected. Under these circumstances, if the statement be true, and I think that no one will charge me with having exaggerated the condition which does frequently exist, we must all ultimately reach the same conclusion. This will be that the operation for removing a uterus containing a fibrous growth should only be resorted to when absolutely necessary and, I would add as the result of my own observation and personal experience, only to save life. My experience is not a recent one, as the length of time which has passed since my first operation for removing the uterus

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with a fibrous growth has been probably longer than that of anyone within reach of my voice, and I can claim to have had some good results and some very unsatisfactory ones. For years past I have honestly striven to define, if possible, the limit of necessity for this operation, and have consequently been misrepresented as opposing it under all circumstances, which is an absurdity.

At the present time it is in accord with my judgment that the more rapid the growth of a uterine tumor, the more urgent the necessity for total extirpation, and I hold this view without reference to the tendency to hemorrhage. Rapid growth is indicative either of sarcoma or of a condition in which the tumor seldom becomes pedunculated, because the uterine tissues and those of the tumor are so blended, as a rule, that is impossible to enucleate the mass without great danger of perforating the uterine wall.

Under these circumstances, when an operation has been attempted and could be only partially done, and the patient has been weakened by a great loss of blood, death frequently results from blood-poisoning. The necessity may arise for removal of the uterus when the tumor has become so large, or is so situated, that the proper examination cannot be made nor the loss of blood controlled. But the danger from an operation is greatly increased with the size, so that a reasonable delay is warranted to ascertain if the limit has not been reached in its growth, when the loss of blood may become modified. The age of the patient should have some bearing in determining the necessity for removal of the uterus. The existence of a rapidly developing fibrous growth in the uterus of a woman of twenty is a far more serious circumstance than it would be in one at forty years of age, if we are able to exclude the existence of sarcoma.

I have seen it stated by some recent writer, who was an advocate for removing the uterus under almost all circumstances, that a woman suffering from a fibrous growth could have nothing to look forward to after reaching the meno-

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pause, and he made the additional assertion that no change ever took place at that time. This is simply a haphazard statement. It is my belief that no one in the profession, at home or abroad, has given more attention than I have to this subject during the past thirty years. I am justified, from this experience, in making the statement that in a large proportion of patients who have suffered from fibrous growths of the uterus great changes do occur at the time of the menopause, or after that time—in what proportion it is impossible to ascertain, but the numbers are certainly sufficient to anticipate for many some amelioration at that time in their condition. I have certainly seen tumors of fair size disappear at this period of life, others have decreased in size, many have remained stationary for years after, while I can recall but a few instances in which the tumor increased rapidly in size after the change of life had taken place. It must also be borne in mind that these neoplasms sometimes disappear as the result of pregnancy, and not infrequently their growth becomes self-limited in consequence of the pressure exerted on their bloodvessels, and these have frequently been known to disappear or their development to become arrested from the same cause. As these facts are in accord with my experience, I cannot in justice to my own judgment accept without question the teaching of those who favor an indiscriminate removal of the uterus for fibrous growths. I have stated that this subject has occupied much of my attention during the past thirty years, and I may add it is my honest belief that no one has succeeded in removing a greater number of fibroids from the uterine canal than I have done in the same period. It is from an intimate knowledge as to how much good can be accomplished that I have been induced to present this subject for your consideration, and I have done so notwithstanding it necessitates frequent reference to my own work. Nothing is more distasteful, but in justice to myself I must do so, because I originated the method of which I am to treat and have con-

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tinuously practised it for over thirty years. Yet it is now coming back to us from abroad as an original method, with the foreign indorsement and title of "Treatment by Morcellement."

Velpeau and Amussat were the first to enucleate, or, by force, to tear these growths from their bed; Dr. Sims at an early period of his professional life forcibly separated a fibroid with a stout steel instrument, and afterward Dr. Thomas introduced the serrated scoop. But by all these means more or less damage was done to the surrounding uterine tissues, and a cavity was left with a roughened surface, which sloughed more or less before the space could become obliterated. The procedure which I originated is entirely different, and consists in firmly seizing a growth with a large tenaculum or double hook and by traction exciting sufficient uterine contraction to displace the mass, and at the same time by the contraction excited to close up the space which had been occupied. Elsewhere I have stated: "This action may be illustrated by the removal of a body from a mass of India rubber. If the rubber were stationary and sufficient traction were made with a tenaculum on the body buried in the mass, the process would be similar to that by which a tumor becomes pedunculated. We have substituted force for the action of gravity, and the natural elasticity of the rubber may be likened to the muscular action of the uterus. Now, when the body is drawn out from the mass it brings with it a portion of the rubber in the shape of a pedicle, and no cavity will remain, since the elasticity of the rubber is sufficient to cause it to close in behind, *pari passu* with the advance. And so when traction is made on a tumor, with the effect of exciting sufficient muscular action, the space which was filled by the growth will immediately become obliterated, or at least there never will remain more than a small and unimportant cavity. Great care is taken to do as little damage as possible to the tumor until it is evident that the uterus is contracting sufficiently to aid in

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displacing the mass and at the same time to obliterate the cavity."

Unfortunately the case-books for the first six years of my service as surgeon-in-chief of the Woman's Hospital were lost, or rather stolen, some years ago. These six years included much of interest in connection with the development of gynecological surgery, and this period covered the most active portion in original work during my professional life. In consequence of this loss I cannot state positively when I began the method of making traction and of removing these growths piece by piece as the mass was displaced into the canal. But my recollection is very clear in reference to one fact, that it was in such an operation that I made the earliest use of the different curved scissors which I had devised. I hope I may be excused for the digression, but while I am substantiating my claims I may well place it on record in this connection that the profession is indebted to me for the introduction and general use of scissors in surgery. With the use of different curved scissors many operations in plastic surgery were rendered comparatively simple of execution, which would have been almost impossible with the knife. But in no class of operations have these scissors been of more practical service than within the uterine canal for the removal of fibrous growths. My impression is that during the winter of 1861 and 1862 I first employed traction for the purpose of removing fibroids, and shortly after used the scissors. However, I shall quote from a paper termed "Treatment and Removal of Fibroids from the Uterus by Traction," which was read by me before the Medical Society of the State of New York in February, 1875, and was published in the volume of *Transactions* of the Society for that year.

I shall make an extract at some length from this article, and cite several of the cases which are equally as well fitted now for illustrating the subject as they were when selected for the purpose, over twenty years ago:

"It is my belief, as the result of observation, that fibrous

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tumors become pedunculated only when situated at a point where the force of gravity can be exerted. This force acts as a source of irritation to excite the muscular fibres of the uterus to contraction. I have also noted that the muscular fibres throughout the whole organ do not contract equally.

"But there are many cases where the tumor is not so favorably situated, where the action of gravity cannot be exerted, and where uterine contraction, if excited, is lost and inert in displacing the tumor from its bed.

"For the relief of a large number of these cases it has been my practice to excite uterine contraction by making traction on the growth. This action I have continued until the tumor becomes pedunculated from being crowded out of its bed by muscular contraction closing in around and behind the mass. As an illustration of this action we may imagine the removal of a body by traction from a mass of India rubber, where the contractility of the substance would be sufficient to close in behind, as the advance was made, and obliterate the cavity on the withdrawal.

"My attention has been directed to this subject for a number of years, but the development of my views to the present standpoint has been very gradual. But I cannot demonstrate this progress better than to present somewhat in detail some prominent cases which have stood by the way as so many sign-posts.

"In 1863 a patient was admitted to the Woman's Hospital with a fibrous tumor, distending the uterus to the size of full term, a portion of which filled the vagina and had already begun to slough. I could form no idea by a digital examination as to its attachments. I applied a pair of forceps, with the view of delivering the mass until I could reach the base, around which I intended to have applied the chain of the écraseur. My efforts, however, were fruitless, as the tumor was too large above to enter the pelvis. Fearing to leave the patient in this condition, I passed, with the aid of Gouch's canula, a stout twine around the mass as

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high up as I could, within the uterine cavity. To the end of the cord I made a slipknot and strangulated the mass to control the hemorrhage which I anticipated. Steady traction was made on the cord by an assistant, for fear that hemorrhage would occur should the noose become relaxed. I proceeded to remove the mass, piece by piece, with the aid of a large tenaculum and a pair of properly curved scissors. After I had taken away a large portion, I was surprised that the vagina continued to be occupied by about the same-sized mass as at the beginning. But I was so much occupied with the work immediately before me that I did not notice the gradual decrease in the size of the uterus until near the close of the operation. As I advanced the cord was cut by accident. There was no bleeding, so I introduced my hand within the vagina and proceeded with the operation by pulling down, with the tenaculum, portion after portion, until the pedicle was reached. I thus removed the whole tumor with scarcely the loss of an ounce of blood after the traction had been commenced. I noted the blanched appearance of the mass remained the same after cutting the cord as the strangulated portion did after the blood which it contained had escaped. It was a matter of the greatest surprise to me, for which I could offer no explanation, that the pedicle for such a mass should not have been larger in diameter than the index finger. Previous to the operation I had supposed the greater portion of the tumor was buried within the uterine tissue. At the termination of the operation the uterine canal was barely five inches in depth. The mass contained a number of cysts of various sizes, and the quantity of fluid which escaped could not be estimated, but the pieces of the tumor weighed together nearly seven pounds. The patient recovered without a bad symptom.

"From this time I have seldom used the écraseur, but have removed with scissors any growth within the uterine canal which I could reach. I have had no fear of hemor-

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rhage, for this case taught me that it could be controlled in the manner I have described.

"In February, 1867, a patient was admitted to the Woman's Hospital with a large fibrous tumor imbedded in the greater portion of the anterior wall of the uterus. The tumor encroached on the uterine cavity, but only so far as to give a marked curve to the canal, as nearly the whole was interstitial. The case was under the care of Dr. John G. Perry, then one of the assistant surgeons, who, by my advice, continued the use of sponge-tents for some two months or more. After an absence of several weeks she returned to the hospital in consequence of continued pain from uterine contraction. The os was found dilated to some four inches in diameter, with the tumor presenting as a child's head. A broad attachment could now be felt just above the vaginal junction, somewhat less in width than the portion of tumor occupying the canal, while previous to leaving the hospital merely a uniform projection existed. June 3d, I operated by passing well up into the canal a large tenaculum, and by steady traction drew down or rolled out into the vagina a large portion of the mass. I took out with a pair of scissors a large wedge-shaped portion, and, as the traction had already excited uterine action, I removed piece after piece, as the tumor could be drawn down, until the uterus had been emptied. When the pedicle was divided it was less than half an inch in diameter, and was formed by the capsule covering that portion of the base of the tumor which was nearest to the uterine outlet at the beginning of the operation. The location of the pedicle at this point, I have noticed, has been without an exception. I have referred to the recorded history of the case, and find that the depth of the uterus was not noted, but my impression is that it was eight inches previous to the operation. The lower portion of the base was felt just within the cervix, and the attachment of the tumor extended from that point to the fundus. The base therefore could not have been less than seven

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inches in length, with a width of from three to four inches. I purposely commenced the traction as high up as possible, and away from the lower portion of the base. I excited muscular action at the fundus, where it seems always to be greater than in any other part of the organ. As I rolled out the tumor from above, its separation advanced from this point downward as the uterus contracted on the diminishing size of its contents. The portions of this tumor weighed together four pounds and a half.

"A case similar to the first one given was admitted to the hospital in 1869, in the service of Dr. George T. Harrison. The vagina was filled by a portion of the tumor, which had begun to slough, and the patient already presented the symptoms of blood-poisoning. I used a cord for the purpose of making traction in the beginning, but afterward drew down the tumor as I have described, and removed it piecemeal. The pedicle was not larger than the index finger, yet previous to the operation I am certain that fully one-third of the tumor was interstitial. This seemed to be the case, at least so far as the opinion could be based on the passage of the sound as an indication of the depth of the uterine canal. This tumor was also filled with cysts, and their contents lost, but the portions removed weighed a little over five pounds.

"December 8, 1874, as I was about to commence my clinic at the Woman's Hospital, Dr. Whitwell, the house surgeon, informed me that he had been obliged to substitute a patient just admitted for operation whom I had not examined. While she was being etherized I learned that during her last labor, three years previous to admission, the physician had been obliged to remove a large growth from her uterine cavity, which had obstructed the delivery. Menstruation had been free, lasting a week; and for a profuse leucorrhœa, with a constant bearing down and a backache, she had sought relief. The doctor had examined the case, and reported the existence of a large mucous polypus projecting from the os

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uteri. The speculum exposed a soft vascular growth as large as an English walnut, with an attachment to the posterior lip almost as great. There had been double lateral laceration of the cervix, and, although this growth was outside of the uterine cavity, it really sprang from a surface which formed a part of the cervical canal before the accident. The appearance of the tumor was unusual, and led to further examination. I found the uterus very wide from before backward for its apparent depth, and from the rectum detected a deep impression near the fundus, as if from inversion. But the passage of the sound forward five inches indicated the presence of a fibrous tumor in the posterior wall, extending nearly to the fundus without encroaching on the uterine canal. The growth was very soft, and bled profusely in consequence of the tenaculum tearing out on making the slightest traction. I therefore resorted to my favorite means for the purpose—a cord with a slipknot. The tissue of the pedicle, which had been drawn out, was dense, and I soon discovered that it was enclosed within a sheath having an origin beyond the submucous surface. I divided with the scissors the sheath around the supposed pedicle, close to the uterine surface, and proceeded to make traction as I separated the tissues with my index finger. I was soon satisfied that it was a portion of the fibrous tumor occupying the posterior wall of the uterus, and having advanced so far I had no alternative but to enucleate the whole tumor. In the course of half an hour I succeeded in drawing out from its capsule a mass some four inches in length, round, and of nearly uniform thickness throughout of an inch and a half in diameter. In the beginning, while making steady traction, I confined myself to separating its tumor from the capsule as it presented itself at the opening. The hemorrhage was profuse, and increased so rapidly when I had withdrawn about half of the tumor that I hastened the operation by introducing my finger and breaking up its attachment in advance After the mass had been removed I found the cavity was



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two inches and a half in depth, with the remaining posterior wall of the uterus so thin that I was surprised it had not been ruptured. An equally thin septum existed in front, between the cavity and the uterine canal, which had not been entered. The traction had excited muscular uterine tissue to action, and the size of the organ had materially lessened; but the posterior wall being so thin, the contractile force seemed lost in that direction. Notwithstanding the depth of the cavity had been shortened an inch and a half, it was my impression its capacity had been but little diminished, since its width was greater than that of the tumor after its removal. A portion of the capsule presented at the opening, which I seized with a tenaculum, and drawing down all which was loose, removed it with the scissors. The patient was now placed on her back, over a bedpan, and the cavity washed out with a quantity of very hot water, by means of a Davidson's syringe. She was afterward replaced on the left side, and Sims's speculum introduced, as at the time of the operation. The cavity was dried by a large sponge probang, and as soon as it was withdrawn two drachms of Churchill's tincture of iodine were injected. By the use of hot water the size of the cavity was greatly reduced and the bleeding diminished, but the iodine contracted it still more, and entirely arrested the hemorrhage. Some pledgets of cotton saturated with glycerin were introduced into the cavity, now about an inch and a half in depth, and the vagina was moderately tamponed with cotton dampened with a solution of alum. On the second day after the operation all dressings were removed and the cavity carefully syringed out with warm water, to which had been added some carbolic acid. This treatment was continued from day to day without a bad symptom presenting, and the cavity rapidly decreased in size. December 19th, eleven days after the operation, the temperature suddenly rose to 103°, and symptoms of blood-poisoning were detected. A speculum examination was made, and a sloughing mass exposed, which at first glance appeared to be the

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posterior lip. I found that it was a portion of the capsule protruding, behind which a cyst had formed, containing about two ounces of a thick gelatinous fluid. After puncturing the cyst I removed the remains of the capsule by means of scissors and by tearing it away with a strong forceps. There was some bleeding, but the quantity was not excessive. Curiosity prompted me to pass my finger to the bottom of the cavity, when I detected another fibroid, a little smaller than a pigeon's egg, just projecting sufficiently to map out its size. This I seized with a strong tenaculum, and as traction was made by Dr. Whitwell I cut it out from its bed with a pair of curved scissors. The uterus contracted promptly on its removal, and it was beyond question due to the presence and position of this little fibroid that the cavity had not been more reduced in size at the time of the first operation. I again injected the iodine, and as it excited the uterus to further contraction the bleeding was entirely arrested. January 7th I found the cavity from which this tumor had been removed now obliterated, and the uterus three inches deep. On the 12th instant she was discharged cured from the hospital."

The histories of other successful cases are to be found in my work, *The Principles and Practice of Gynecology*, and examples also are given showing the cause of failure and of death in other instances.

I have frequently seen where the removal of a single fibroid from its bed by traction has accomplished a radical cure. But occasionally the removal of such a tumor seems but to make room for others, which develop rapidly and have then to be removed one after the other.

The history of the following patient is of interest in showing how it is possible to hold these growths in check, and that a woman afflicted with them may be carried through a series of years, even to an improvement in her condition, with a very fair prospect of final restoration to health if she be able to resist, as I fear this patient will not, the urgency of some of her friends for extirpation:

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Mrs. C. came under my observation for the first time early in 1882, when I saw her in consultation. She was then suffering from an enlargement of the uterus with some pelvic inflammation. I did not see her again until December 30, 1887, when she applied for admission to my private hospital, and the following history was then obtained.

Her age was thirty-two. She had menstruated for the first time at fifteen, was regular from the first and continued in good health until she had reached nineteen years of age, when menstruation began to be painful. But, according to her statement, she took no care of herself and committed every excess within her power by over-exercise in dancing and horseback riding. After she had reached the age of twenty-one menstruation became very irregular as well as painful, and she was frequently six months at a time without its appearance. She married at twenty-five, and was sterile. For some time previous to marriage she had become again regular, with a flow lasting five days, and her general health was apparently fully established. But the first menstrual flow after marriage was too free, and with it she had constant pain behind the left hip, which continued for eight days, accompanied by irritability of the bladder. She became an invalid from the time of this menstrual period. I found her local condition somewhat changed from what it had been five years before. The uterus was still enlarged but rather irregular in shape, and on the anterior wall, close to the junction with the bladder, a subperitoneal fibroid as large as an almond projected toward the bladder in the shape of a spur. The uterus had but little mobility, in consequence of an extensive pelvic inflammation which existed on both sides and behind the uterus, a condition which had been caused, or had been greatly aggravated, by an ill-fitting pessary which she had worn for over a year without examination.

Mrs. C. remained an inmate of my private hospital for a year before her condition admitted of dilating the uterine canal with safety, and in that time the uterus had nearly

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doubled in size, notwithstanding that the surrounding inflammatory condition had been removed by treatment.

December 12, 1888. The uterus was dilated with a large sponge tent; this was removed on the following day, and the vagina and uterine canal were washed out with a strong solution of the bichloride of mercury. Then by the use of graduated and large dilators the canal was sufficiently opened to make a diagnosis and for the removal by traction and scissors of two fibrous growths. One of these was as large as a hen's egg and was almost entirely buried in the posterior wall; the other was situated in the fundus and was as large as a pigeon's egg. I suspected from the shape of the uterus that another growth was developing in the fundus but was unable to detect its situation. In this operation I was assisted by my son, Dr. J. Duncan Emmet, and by Dr. Buckmaster.

On January 28, 1889, with Dr. Frederick Whiting to administer the ether, and with the assistance of Drs. J. D. Emmet and Buckmaster, I proceeded to remove the subperitoneal fibroid from the anterior wall of the uterus, which had by this time grown as large as an English walnut. With a pair of scissors I carefully separated the bladder from the uterus, while steady traction toward the vaginal outlet was exerted on the vesico-vaginal flap until the bladder had been sufficiently separated and the tumor reached. Then, with a strong tenaculum, the growth was seized and drawn well down into the wound, fully in view, and so held until I had succeeded in separating the peritoneum, which was attached over the upper portion. Having done this without rupture, the tumor was then twisted on itself by means of the tenaculum, which was deeply buried in the mass. The twisting was made with traction in one direction and then in the opposite one, while at the same time the mass was being separated from the uterine tissue with the finger-nail as the parts presented at the surface. In a few moments the separation was accomplished and, notwithstanding that the mass was apparently about one-half buried in the uterine tissue, when it

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was drawn out the muscular tissue had contracted so promptly as to leave no cavity but only a slightly depressed surface about an inch in diameter. The circular artery, which was very large on the right side, was pushed out of the way, but I felt it pulsating against my finger while working. I only regret that it did not occur to me to ligate it, which could have been done without the slightest difficulty. With a partially curved needle, armed with the silk loop and silver wire, I introduced seven silver sutures in order to again unite the bladder to the uterine wall. The first suture included more tissue than the others and brought up the bladder in contact with the uterus, so as to close the wound from the peritoneum. As the angle of the wound was drawn by a tenaculum toward the vaginal outlet and the sides put on the stretch, each suture was passed from the vaginal surface through the connective tissue into the uterine wall so as to catch up a portion of the denuded surface, through the connective tissue on the other side and out into the vagina. Each suture included less tissue than the preceding one, until at length the bladder and anterior wall of the uterus were drawn together and restored to their original relation. She made a more rapid convalescence than she had done before, and her health became greatly improved afterward.

Early in 1893 the uterus began again to increase in size and the flow became more profuse. March 10th I concluded that the uterus was being overnourished by an increased supply of blood which reached it through the old peritoneal adhesions, and I decided to open the abdomen, to separate these adhesions and, if possible, to remove the ovaries. I succeeded in breaking up a large number of these adhesions attached to the uterus, and which doubtless furnished it with a large blood supply, but was not able to find the ovaries or do more, as she suffered from shock. Her convalescence was very tedious and for several days her condition was not promising; but she improved wonderfully after the operation and ceased to have any loss of blood save at the men-

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strual period—in fact, when she could be induced to take care of herself the period would last but a week, and the quantity would not be excessive.

When I saw her last, toward the close of April, the uterus had become reduced at least one-third in size, but in the shrinkage three subperitoneal fibroids had become more prominent. She is now over forty-two years of age, is in good general health, and has passed six weeks without a period. Yet I found her nervous system upset through the influence of some friends who had been urging that she should have the uterus removed, "to make a well woman of her." The object of her visit was to ask that I would operate, as her confidence in me was great, but I declined doing so for the several reasons just mentioned.

The use of ergot is, in my opinion, of doubtful efficacy unless it be employed under very favorable circumstances. It is certainly of no value for the purpose of expulsion if the tumor be so situated that gravity cannot act, and unless the uterine canal be kept fully dilated at the time it is being administered. The injudicious use of ergot has done a great deal of harm by cutting off the proper supply of blood, with the consequent death of the tumor and blood-poisoning afterward. The action of ergot is, I believe, exerted not directly on the muscular tissue of the uterus itself but upon the muscular structure of the bloodvessels, and especially on those distributed to erectile tissue. Its action, therefore, is only an indirect one on the uterus, by causing the vessels to contract. By thus diminishing the supply of blood to the organ, its muscular tissue will contract upon itself to fill the space which would be otherwise occupied were the usual circulation maintained. I have known of a number of deaths from blood-poisoning which resulted directly from the empirical use of ergot, and I can recall two instances of pyæmia with the difficulty increased by abscess in the parotids, and in one by abscess in the liver.

The following case had been treated at home by large doses

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of ergot for months before she came under my observation, and the treatment had been continued apparently without the slightest idea as to the pelvic condition, beyond supposing, from the loss of blood, that she had a fibrous tumor:

December 25, 1893, I was requested by Dr. Robert Milbank, of New York, to see Mrs. H. in consultation at one of the hotels. As a result of the consultation, and by his advice, she was admitted to my private hospital on the next day. I then obtained the following history:

Mrs. H., of North Dakota, aged forty-three years, had menstruated for the first time at sixteen, with no trouble. Married at seventeen and had had one child fifteen years before by a natural labor. From the first menstrual period after this labor the flow had been too free, and for several years it came on every three weeks, continuing always very freely but with uncertain duration. She stated that she had been taking a preparation of ergot daily for some months, and as well as she could recollect there had been for weeks a tendency to fever every afternoon, sometimes with sweating after, and she had been steadily getting weaker during this period, but had suffered no pain. Her appearance was indicative of her having suffered from loss of blood and very suggestive of malignant disease. At the same time her mental faculties seemed greatly blunted, so much so that it was difficult to elicit from her a very clear statement as to her previous history, and the greater portion had to be obtained from her husband.

The uterus was found enlarged, lying forward and not very movable, as there had been at a comparatively recent period an extensive pelvic peritonitis.

January 1, 1894, I operated, Dr. Milbank being present, Dr. Buckmaster administering the ether, and Dr. J. D. Emmet assisting me. The uterine canal had been packed two days before with iodoform gauze, and this was first removed. With great difficulty the index finger was gradually advanced toward the fundus. The presence of a fibroid was easily detected at the fundus, in front and to the left side, and only

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partially projecting into the canal. With the finger in the canal and one hand over the abdomen, it was estimated that the tumor was as large as the closed fist. By means of a stout tenaculum the mass was gradually dragged down and out of its bed, through the slit which had been made with a pair of scissors into the uterine tissues covering it. The tumor was slowly separated from the uterine tissue by stripping it back in the opposite direction with the finger and scissors as the mass passed into the canal. When the tumor had by this means been about half delivered from its bed a portion of the mass was cut out in a cone shape from around the tenaculum with a pair of sharp-pointed scissors. It was then made evident that the centre of the tumor had begun to break down, and the pus, although not more than a drachm or two, was very offensive. As the central portion was too soft to make traction upon it, the efforts for removal were limited to that part of the tumor nearest to the fundus, and the separation was made from above downward. In an hour I succeeded in removing, piece by piece, fully two-thirds of the mass and apparenly all of the central portion which had begun to break down. But her general condition had been most unpromising from the beginning, with every indication of a collapse at an early stage. At length I was obliged to desist, after hastily washing out the canal with a weak solution of the bichloride of mercury and repacking it with strips of gauze; she remained in a critical state for fully twenty-four hours after the operation, and it was moreover exceedingly difficult to rouse her; the pulse became rapid and weak, with some rise of temperature, occasional sweating, and with every indication that she was still suffering from blood-poisoning. On the following day I removed the gauze, washed out the uterine canal and with great difficulty replaced the uterine tampon. After an interval of twenty-four hours longer it became very evident that to save her life it was necessary to remove without further delay from the uterus the cause of the blood-poisoning.

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Ether was carefully administered, and I at length succeeded in getting away the remaining portion of the tumor, which it was found had also begun to slough. It was noted that the uterus had decreased in size fully one-half since the operation. A strong application of carbolic acid and glycerin was made to the fundus and over the site of the tumor, and the canal was repacked with gauze. The pieces of this fibroid after removal weighed altogether three-quarters of a pound.

After twenty-four hours the gauze was taken away and the uterine canal was thoroughly washed out from time to time for several days. Fully a week passed after the last operation before the dulness of her mind cleared up. The convalescence was tedious, but in four weeks she was well enough to return home, at which time the uterus had regained its normal size and she had one natural period.

Just one year after the operation this woman walked into my office in perfect health to thank me, and so changed was she that I did not know her. She was most grateful and stated that she had never been in such perfect health. While she was an inmate of my hospital I had learned how careless she had always been in taking care of herself, and on this occasion I scolded her for being so lightly clad for the season, and her answer was that she never took cold. Within a few hours after she was on her way to Washington and was exposed during a sudden change in the weather. Eighteen hours after pneumonia developed, and in three days from her visit to me she was dead.

I feel that it is not necessary to offer the histories of any additional cases to illustrate the subject. Great dexterity in removing these fibroids by traction and by section can only be acquired by practice. Not only does this experience afford the greater facility for working in so confined a space, but greater judgment is acquired in avoiding perforation of the uterine wall and in doing the least amount of injury to the tissues not immediately involved with the fibrous

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growth. But there are several points which it is better should be fully appreciated and borne in mind beforehand, rather than that this knowledge of the necessity should be acquired by experience.

As the portion, or pedicle, which is divided in making the final separation must always be situated at the lowest part of the growth, namely, that nearest to the mouth of the uterus, it is necessary always to begin the traction as far off as possible at the upper portion.

The strong hook buried in the tumor should be twisted on itself so as to keep the point as much as possible toward the canal and away from the direction of the uterine wall. And for the same reason the points of the scissors also when in use should always be made to cut toward the centre and upon the finger, which must be kept in the uterine canal; thus the operator will be able to judge of the progress made.

As soon as the upper portion of the tumor is displaced, and the uterus responds by contracting, it is better as far as possible to continue the separation above, and by working from above downward, stripping the uterine tissue with the finger-nail back from the tumor as it projects into the canal. It is better never to attempt to dig, as it were, the tumor out of its bed, unless there should be some special reason for doing so. Nor should any portion of the tumor be cut off until it begins to block the way, and only when the uterus is contracting. When a part is cut away a sufficient portion should always be left, projecting into the canal, with which to make traction for the purpose of displacing the remaining part of the tumor.

The traction exerted on the tumor is not to be made by dragging the uterus in the axis of the vagina down toward the outlet. But it is to be exercised by a twisting movement laterally in one direction and another, and when made downward the uterus must be steadied by means of counter-pressure made by the finger in the uterine canal against

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some part of the tumor, or in its neighborhood, as the mass is being separated with the finger-nail or scissors.

Whenever there is a marked difference in the density of the tissues it will be possible to separate the tumor rapidly from its bed, and with this condition the uterus generally contracts promptly. Under these circumstances the operation is almost a bloodless one, but when the tumor has grown rapidly, and its structure and density are about the same as that of the uterine tissue, the bleeding is often excessive. It then often becomes an impossibility to separate such a growth with "clean delivery." In the effort to remove it a large portion of the mass will become frayed out or in shreds, a condition likely to end in blood-poisoning, as these shreds not being properly nourished soon begin to slough. It is better to desist at any early stage and as soon as the condition can be recognized, then to wash out the canal and pack with gauze. If in twelve hours, on removing the packing, it should be evident that the uterus has made no progress in expelling the growth by contraction, and if there should be any evidence that sloughing had begun, then, with our present experience, the proper practice is to remove the uterus without delay, or the patient will ultimately die from blood-poisoning. Yet I have known of several instances in which the patient in time made a good recovery, and under apparently the most unfavorable circumstances of exposure to blood-poisoning, as the mass slowly sloughed away.

The means at our command for fully dilating the uterine canal are still defective and unsatisfactory. Nothing which has yet been employed for the purpose has proved so effective as sponge tents, and our future advance will rest greatly upon some improved method for preparing these so that they may be used with safety. I have yielded to the feeling of prejudice generally held by the profession against the use of sponge tents, and have not had the courage to employ them for some years past. But at the same time I believe that if they were properly prepared and the patient was

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properly cared for at the time of their use, little danger would be incurred. This does not seem to be an unreasonable expectation, for if a sponge can be made innocuous to the peritoneum, certainly its use might be rendered safe in the uterine cavity. Our individual experience must necessarily carry a certain amount of weight in forming an opinion, and the views which I have expressed have been so influenced. During a number of years I used sponge tents fearlessly, and they were specially prepared by a nurse who had no idea of the necessity for any aseptic precaution beyond perfect cleanliness and the free use of turpentine, soap and water. I can recall scarcely an instance of any trouble after the use of tents prepared by this woman, certainly I never had any serious difficulty. It was then my practice to employ sponge tents several times a week, and often for months consecutively, in special cases when dilating the uterus for the descent of fibrous growths. I frequently used them at that time in cases of subinvolution, before I had learned the close relation of this lesion to a laceration of the cervix. I then employed the tents, as I wished to excite by their use both pressure and drainage, leaving them in frequently for two days before removal, and would then irrigate the canal with a stream of hot water until it had contracted.

This nurse at length married and left my service; I then purchased the tents I needed from Mary Smith, the old nurse who had served in the Woman's Hospital. It was supposed that she had learned the art from Margaret Brennan, the head nurse, who had been as careful and trustworthy in preparing these tents as the nurse in my private hospital. For a time Mary Smith did a good business, as her tents were beautifully made, but I, in common with every one who used them, soon began to have not only inflammatory trouble set up, but had every now and then an unaccountable death. It was at length found that this woman carried off all the sponges used in the laparotomies done at the Woman's Hospital, which had been intrusted to her to burn

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after each operation. As she supplied the instrument-makers, as well as most of the gynecologists in New York at that time, the consequences of her devilish work were soon widespread throughout the country.

After getting the sponges surgically clean, I believe that the remaining difficulty would consist in being able to sterilize the saturated solution of gum arabic which is needed to stiffen the sponge and render it the easier of introduction. Possibly this can never be accomplished without destroying its peculiar properties, and compressed sponge may have to be employed at times as a substitute for the gauze. While it is quite possible with the use of gauze to sufficiently dilate the uterine canal previous to an operation for removing some growth, it is not so effective as the sponge tent for dilating week after week for the gradual projection of the fibrous growth into the canal. Moreover, the sponge tent is comparatively easy of introduction, while the introduction of the gauze is often painful and necessitates the frequent use of ether.

It is more necessary than in any other operation in gynecology to observe, with the minutest detail, every known aseptic precaution in preparing both the patient and the materials needed for an examination or operation within the uterine canal. As my remarks are addressed to experts, it is not necessary for me to enter into details as to how these measures are to be carried out. I would urge that in all cases of fibrous growths of the uterus the operation for removal of the uterus should be delayed for a reasonable time, unless there should be some urgent and special reason for doing otherwise. This delay is urged that dilatation may be honestly tried, since my experience has clearly shown that it is not possible beforehand to form the slightest opinion as to what can be accomplished in any individual case from continued dilatation.

When a large fibroid develops, with several smaller ones in the neighborhood, it frequently happens that the larger

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growth is crowded outward and becomes subperitoneal as a result of uterine contraction, the force of which is always lost or broken up, in the direction of the uterine canal from the presence of the smaller growths. In several instances I have recognized this condition, and after having removed by traction the smaller tumors, the larger one has eventually become pedunculated, as soon as the uterine contractions and gravity could act together in forcing it out in the direction of the least resistance.

Finally, as to the origin of these tumors, I am led to believe, as the result of my observation, that nearly all fibrous growths have their beginning, not only in muscular tissue but near to the uterine canal, where the functional activity is the greatest and where they would be better nourished. I believe, moreover, that the natural tendency is for such a growth to advance toward and finally to project into the uterine canal.

I believe that the time may come when it will be found that the origin of these growths, from the tissues surrounding the uterine canal, is always due to perverted nutrition. And they seem to have some close connection in their genesis with the changes following menstruation in anticipation of pregnancy. Hence their origin, as a result of perverted nutrition, would occur in those women in whom the true function of the uterus had been sacrificed through want of the needed stimulus of pregnancy. This view would seem to be substantiated by the well-known fact that child-bearing women rarely suffer from these growths, and when they do exist with pregnancy they so frequently disappear during involution that their removal cannot be attributed to an accidental cause.

## DISCUSSION.

Dr. William M. Polk, of New York.—It is a very great honor to be called upon to open the discussion upon a subject introduced by Dr. Emmet, who, we know, has been one of the

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fathers of our society, and whom we all love to follow. The task which is presented me seems to cover nearly the whole range of uterine fibroids, for, as I understand it, Dr. Gordon, who read the first paper, boldly announces the proposition that all fibroids, no matter of what character, should be removed, while Dr. Emmet limits his paper largely to the treatment of the submucous variety of these growths, and takes decided issue with Dr. Gordon as to the propriety of the procedure which he advocates. This, then, Mr. President, places upon the shoulders of any one occupying my position the task of endeavoring to reconcile the differences which apparently exist.

Dr. Gordon.—I would like to say one word. In the last part of my paper, which I had not time to read, I state that all tumors which can be removed easily and safely through the vagina should be so removed.

Dr. Polk.—The doctor wishes me to bring at once the vaginal route into this discussion; but I beg to say that is deferred for the moment.

I think that Dr. Gordon is unfair to the gentlemen represented by Dr. Mundé, who took issue several years ago with this wholesale hysterectomy, for they predicted from past statistics. He is able to say now, from the complete success which he has had, that these gentlemen prophesied wrongly. Now, I assume that no one will take issue with Dr. Gordon as far as the mortality is concerned, for, if anything has been settled, it is that fibroids can be removed without mortality. You can limit the mortality to one per cent. or half a per cent. if you choose by restricting your cases, as one would do in general surgery.

The next question raised by Dr. Gordon is the way in which the operation should be done. I shall leave that until the time when I speak of the method of dealing with these growths; but I would like to say here with regard to a point raised by Dr. Emmet, that we must differ from him concerning the advisability of removing the uterus for fibroids. All of us who have had any experience have seen women so immeasurably benefited by the procedure that we have been more than compensated for the failures occasionally met with. Therefore, I think that it is wrong for this distinguished reader to take the apparently

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uncompromising position which he has done with reference to cases of this kind. Undoubtedly there are some women with small uteri, not so large as the fist, in whom the element of pain alone, due to the fibroid change, is so great as to make it our duty to remove the organ, and many of us have done this and given the patients such relief as they had never dreamed of since their illness. I could go on and name instance after instance in contradiction to the position taken by Dr. Emmet, and which, from our standpoint, justify us in proceeding as we expect to continue.

Now comes the question whether these women who are operated upon have bad after-results. Of course they have. I do not say all of them. The majority of them do not, but many of them do. But the average result is not worse than after opening the abdomen for any other condition. We all know, for instance, that there are cases on record in which paraplegia, in which even acute ascending myelitis, has been said to result from the removal of fibroid growths, and I take it for granted that any man who has done a number of these hysterectomies has had patients return to him with mild evidence of paresis; at least they give the minor expressions of peripheral paresis. It is due to changes in the cord itself, produced by the traumatism of the operation. But these cases are comparatively few.

Then there is another fact to be borne in mind. This whole subject is, and has been, in the transition period. We have had to defend this measure in the face of a mortality which practically excluded it from the realm of general surgery. Of course, mistakes were committed. Of course, patients were operated upon who might better have been let alone. But this is simply the experience of every surgical procedure which advances to success. It is by that method alone that we are able to winnow out the chaff and to get at the real substance. Regarding the method of operating, it seems to me that we have neglected too much the infra-pubic route. The success to which we have attained by the supra-pubic method can, I think, be reached at infinitely less cost by the infra-pubic. Now, I see gentlemen here who are prepared to warmly oppose this opinion, and I hope that they will ex-



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press their views, for it is only by means of sharp, direct, aggressive discussion that we can arrive at the truth in this matter. While the vaginal method may sweep from beneath them certain props relating to the saving of this or that portion of the cervix, I hope that they will, nevertheless, give it their candid, unbiased consideration. If a woman has a fibroid tumor which is movable, which is reasonably soft, even though it may be as large as the uterus at the sixth month of gestation, that tumor can be removed through the vagina with better results, so far as the patient is concerned, than through the abdomen. The question which is going to receive the attention of the profession in the removal of fibroid tumors during the next year or two is, In which direction lies the safety of the patient? A certain class of cases can be dealt with best from above; another class can be dealt with best from below.

In conclusion, let me say that while I have strayed no little distance from the ground taken by Dr. Emmet, I wish the doctor to understand that no one appreciates or values the work which he has done in the direction of morcellation more than myself. I am sorry, however, that he did not extend his remarks to include the uterus as a whole, and I suppose that he would have done so had he not put himself in a position of direct opposition to total extirpation. But the method which he advocated in the removal of submucous fibroids of the uterus has only been extended by other gentlemen to removal of the uterus as a whole; and if he can bring himself to advocate this, then the method which he has introduced is the one which we shall follow.

Dr. J. M. Baldy, of Philadelphia.—Dr. Polk has so thoroughly covered the subject that there are only one or two points remaining to dwell upon. First, the question of the advisability of extirpation and the results following. There is no question whatever that, as has been stated by Dr. Emmet, a certain set of symptoms are substituted for another by hysterectomy. But it behooves us to study carefully what are the symptoms from which the patient suffers, and what are the symptoms which are substituted. We all know that removal of the uterus and appendages means that the woman will suffer from the menopause. We also know that the symptoms of the menopause

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are amenable to cure. Therefore the substitution of a class of symptoms which are sure in the future to be cured by Nature herself is a very great desideratum, even if nothing else is gained. But, as has been brought out by Dr. Polk, patients are unquestionably relieved of their cardinal symptoms after hysterectomy, and although they still have the symptoms of the menopause, yet the relief is so great that they hardly realize they are the same women one week or four weeks after the operation. Must we let these tumors go on until we are forced, as I was in a case recently, to abandon the operation because of the extent of the adhesions? The woman had been seen ten years ago by a physician who recognized a tumor of the uterus. She temporized until finally the fibroid attained to enormous dimensions and became generally adherent. Had she been operated upon ten years ago no doubt the tumor could have been removed with little or no difficulty. Now she has but one or two years of life at most, on account of the existence of the tumor; if the tumor was not present she would live perhaps to advanced age. It does seem to me that unless we give to these patients the benefit of our surgical skill we do not act in their best interests.

I would only add, so far as the stand taken by Dr. Gordon is concerned, that my own experience upholds it in toto. Regarding the best method of removal, I understand that the subject will be discussed to-morrow, and shall therefore not touch upon it.

Dr. Paul F. Mundé, of New York.—My friend, Dr. Gordon, made two years ago a proposition which he has stated again to day, and which I opposed then on the same ground that I oppose it now. He said then that he would always remove the uterus and appendages for a fibroid, no matter how small, as soon as that fibroid was detected. I vigorously opposed such practice then, and I oppose it with equal vigor to-day. I am not as conservative as Dr. Emmet. I have done a great many cœliotomies. I am supposed to be a professional cœliotomist. Therefore there is no reason why I should not take out the uterus for fibroids as well as ovarian tumors or diseased ovaries and tubes, if I thought that it was the correct thing to do; but I do not feel, after an experience extending over twenty years, that I am justified in holding a different position from that which I do hold,

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namely, that no uterine fibroid should be removed simply because it is a uterine fibroid. It should not be removed unless it produces symptoms either by pressure, by rapid growth, or other conditions seriously affecting the health of the patient, unless, for instance, there is hemorrhage which cannot be checked by medicine, by curettage, or even by electricity; or unless the patient insists on having it removed because she has been told of its presence. I do not believe that any uterine fibroid should be removed simply because it happens to be in the uterus. When Dr. Gordon says that in ten years these fibroids may become very large and may kill the patient, I admit that. But we must keep these patients under observation, and if we find at any time a change for the worse, then operate. I have acted on this principle in several recent cases.

In one case I refused to operate upon the patient two years ago, but three months ago I operated on account of rapid growth of the tumor. In another I operated last week for the same reason on the authority of the patient's physician. When Dr. Gordon read his paper two years ago but few of those present agreed with me. Since then the operation of abdominal hysterectomy for fibroids has made great progress, its results are excellent, and I do not deny its successes; but I still think that an unnecessary operation ought never to be performed, no matter whether the patient recovers from it or not. That is the reason why I have never operated, and never shall operate on every fibroid which comes under my observation simply because it happens to be a fibroid. If it produces serious symptoms I shall remove it as quickly as anybody.

As regards the removal of fibroids by traction and morcellation, I have removed many tumors in this manner, one even weighing three pounds. Within two months I operated on one weighing two pounds, in a virgin. Once I removed at one sitting thirty-four distinct fibroids through the vagina; the patient has since borne a child. But I do not think that there is any comparison between supra-pubic hysterectomy and removal of tumors by traction through the vagina. I would certainly never think of removing such tumors as Dr. Emmet has mentioned by the supra-pubic method.

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DR. HOWARD A. KELLY, of Baltimore.—I agree thoroughly with Dr. Mundé and differ totally and absolutely from Dr. Gordon's stand, that all fibroid tumors call for operation. I have seen many fibroids disappear while the patients remained under observation. I have also discovered fibroids as small as a pea, and even smaller, by rectal touch and pulling down the uterus. I operated the other day and found a fibroid not as big as the end of one's finger. (The operation was not performed on account of the fibroid.) Surely these cases do not warrant interference. Some of these tumors, on the other hand, grow slowly, and by waiting become more favorably situated for operation. Dr. Skene will remember the case of a woman who had an interstitial fibroid twenty-three years ago, when she was under Dr. Atlee's care. Dr. Skene relieved her hemorrhages and reduced the size of the tumor by electricity, but she came to me later with severe nephritic colic. I thought that one of the ureters was compressed and urged operation and removed a fibroid tumor weighing fifty-nine pounds, attached by a pedicle, an inch and a half broad and two inches long, to the fundus. I have a copy of Dr. Atlee's drawing made twenty-three years ago.

I operate upon cases in which hemorrhage is persistent and cannot be relieved by other means; in which pain is persistent and cannot be relieved; in which the tumor is growing rapidly; in which it is making injurious pressure; in which it is associated with inflammatory disease or pus-tube; in cases in which the patient is so scared by the knowledge that she has a tumor that she is semi-invalided by it. The last indication I have accepted only two or three times.

My own plan of operating is very rapid, saving much time, and is, above all, extremely satisfactory. By it I have removed fibroid uteri in three, four, and five minutes, without haste.

I ligate the ovarian vessels near the pelvic brim, and then cut on the proximal side of the ligature. Next the round ligament is tied and the vesico-uterine peritoneal fold cut from round ligament to round ligament, and the peritoneum and bladder pushed down; the uterine artery is then tied, and the uterus cut across in the cervical region with a concave spud, and pulled up, exposing the other uterine artery for an inch or more. This is

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clamped, cut through, and the mass rolled further out, the round ligament clamped and cut, and the ovarian vessels clamped and cut and the mass taken away.

The cutting loose of the tumor is from one side down across the uterus and up the other side. Ligatures are applied to the clamped structures. The uterine stump is then closed with silkworm gut and the peritoneum drawn over all and the abdominal wound closed.

DR. R. STANSBURY SUTTON, of Pittsburg.—There is one criticism which I have to offer on both of these papers. It is with reference to a pathological point. I believe that it is not right from a surgical standpoint to talk of a myoma and a fibroma as the same thing. They are different tumors. There is as much difference between a myoma and a fibroma as there is between an adenoma and an angioma; and it is not right to put these tumors in the same classification in the discussion. We have all, or at least those of us have who have been in the profession twenty or thirty years and watched the progress of these tumors, seen some disappear. Has it been the myoma or has it been the fibroma? I shall assert here that no man has seen a true fibroma, while doubtless many have seen a myoma, disappear. Now, in judging of the necessity for surgical relief, one must often determine whether the patient is suffering from a myoma or from a fibroma. I indorse the remarks of Dr. Mundé and Dr. Kelly with regard to the necessity for operating on general principles. I would be as likely to think of cutting off a woman's leg for every affection of the knee-joint as of taking out the uterus in every case of tumor, whether it be a myoma or a fibroma. But we must discriminate between these two forms of growth in this discussion. It has been said that every case is a law unto itself. This is because of the wide difference in pathological structure and of the great variety of symptoms resulting from that difference.

There are two reasons for operating on a woman with a large uterine tumor which have not been mentioned. A patient who is in good circumstances, and who is taken care of, can nurse a troublesome tumor and avoid an operation; but one who must make a living, and who must have the tumor taken

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out or go to the poor-house, is entitled to an operation. Again, a woman may become pregnant while carrying a tumor, thus necessitating an operation. There may be no choice, either for her or for the surgeon; the operation must be done.

I object to this expression "selecting cases." If a man is to select his cases he will take the uncomplicated and easy ones. But the true surgeon's cases are selected for him. He has no voice in the selection of his cases.

I desire to show two tumors which illustrate a point. This uterus, which contains a large myoma, was removed from a woman who was ten weeks pregnant. The patient is now well. A few days later another woman carrying this specimen came for operation when she was three months and a half pregnant. She is also well. I cannot conceive how it would be possible to have avoided an operation in either of these cases.

DR. MCMONAGLE, of San Francisco.—It occurs to me that the gentlemen have not mentioned one method of treatment which I have been able to carry out in some cases. I refer to enucleation of these fibroid tumors from above, which can sometimes be done as well as from below. It is in cases in which the tumor has a tendency downward that vaginal enucleation can be accomplished, as suggested by Dr. Emmet. But there are some cases in which intra-mural tumors develop outward, and it becomes possible to remove them by enucleation through the abdomen, leaving the uterus and appendages.

DR. A. P. DUDLEY, of New York.—I do not propose to repeat what has already been said respecting the treatment of these cases, but wish simply to call attention to two or three points. First, as to the use of catgut in hysterectomy, I would add my experience to that of one of the readers who advocates it. I believe that failures with it by others have been due to not using it in the proper way. I have watched the use of catgut by quite a number of my fellow operators, and have almost invariably seen them remove the catgut from the bottle in which it was sterilized and place it in water, "soak it up," so to speak, thereby undoing every process of aseptic preparation carried out by the manufacturer. To place catgut in water spoils it.

THE PRESIDENT said that the question of the preparation of

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catgut and its use would come up for discussion after the reading of the next paper.

DR. DUDLEY.—Then I shall pass to the next point. It was remarked by Dr. Emmet that he believed the majority of fibroid tumors were submucous in position. I only want to say that my experience has been the reverse. I believe that the majority of growths within the uterine tissue are subperitoneal.

Regarding dilatation of the uterus preparatory to removal of tumors by the sponge-tent, I believe that sponge-tents are the most injurious and dangerous things which you can put into the uterus, simply because we do not know how or where they have been prepared, and also because of the difficulty of removing them. Fibroids which are not too large, which weigh not more than three or four ounces, or perhaps half a pound, can be removed without previously dilating the canal, but, if necessary, by cutting the cervix on both sides. This in my hands has not been dangerous. With the uterus thus opened sufficiently large to introduce two fingers you can, with the scissors or scoop, remove fibroids of small size without having subjected the patient to the danger of sepsis through the use of tents. Then sew up the cervix, and primary union will take place.

One other point. Such discussions as we have had to-day, we all claim, lead to higher education. Every man has his pet theory; every man has his experience. And I believe that it is for us to take all and apply part of each to our own individual experience. We know that fibroid tumors are treated by electricity, by ligating the uterine artery, by hysterectomy, infra- and supra-pubic, by morcellation. Now, of the five methods, we can apply one or the other, or a combination of them in the cases which come to us. It is my belief that we should not accept any one theory as the perfect one, but that we should apply the combined knowledge of all observers. For my own part, I advocate conservatism rather than a radical operation in all cases where the former is practical.

DR. ALEXANDER J. C. SKENE, of Brooklyn.—While fully satisfied that there is a very large field for Dr. Emmet's method of treating uterine fibroids, just as I believe that there is quite a large field for abdominal hysterectomy, it does seem to me that

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we should address ourselves to discussing the question as to whether one should operate in this way or that. We all know the history of this kind of tumor, and know its tendency to recovery in the vast majority of cases. That, I think, is proved beyond any doubt, because the death-rate from uterine fibroma was not any greater before than since hysterectomy has been performed. Those that are brought within the reach of the surgeon by becoming submucous I know can be managed and cured in the highest sense of the term by Dr. Emmet's method. It was my fortune to become acquainted with one of the earliest cases and one of the worst cases that he had, I believe. The patient was almost bloodless, and the case was left to the care of a man who did know that he could not manage it. She was sent to Dr. Emmet, and she lived for twenty years after the removal of a very large fibroid that was placing her life in danger. She lived, and is perfectly well, and performs all her functions absolutely. I have operated by that method over a hundred times, and with a death-rate of one per cent., and that occurred in a patient who was septic before I attempted the operation, and it was before the days of abdominal hysterectomy. I presume that was a case where it would have been infinitely better had I performed abdominal hysterectomy. This leads me to say that it is not a question of the justifiability of this or that operation, but of the adaptation of the best operation to a given condition, and it seems to me unjust to deprive a woman of all her sexual organs in order to try to cure her of a small uterine fibroid, when she could certainly be cured by Dr. Emmet's operation. It seems to me that one would be an absurdity and the other first-class surgery. When you remove the uterus and ovaries for the cure of a fibroid I do not believe that the patient is very often cured. Dr. Gordon said that he had operated a great many times, and never regretted it. I wish that I could hear what his patients had to say. I believe that patients deprived of the uterus and ovaries suffer more than they do with the fibroid; many of mine do, anyway. We should bear those points in mind, then, and also the fact that was brought to your notice by Dr. McMonagle, in regard to the operation which can be performed in a great many of these sub-peritoneal cases. The case referred to by Dr.

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Kelly was a most interesting one, where abdominal hysterectomy was a triumph of science and of surgery that I am proud to know about. She was under my care, and while I used electricity it was because I could not persuade her to let me remove the tumor. Dr. Kelly persuaded her, and succeeded in removing it. I believe that its weight was fifty-nine pounds.

Dr. George J. Engelmann, of St. Louis.—We have heard extreme views enunciated here. I would like to know whether there are Fellows of this society who advocate hysterectomy—supra-pubic or vaginal—for *every* fibroid. Are there any who lay down this law strictly? Are we to understand that this is Dr. Gordon's position?

Dr. Gordon.—Not altogether.

Dr. Engelmann.—I have had a large experience with disappearing tumors. I would like to be able to diagnosticate, as Dr. Sutton suggests, whether a tumor is a myoma or a fibroma. I know that there are a large number of solid uterine tumors which have a tendency to malignant degeneration and others to suppuration, while some benign ones have a tendency to retrograde metamorphosis. As I stated, I have seen a great many tumors disappear, some without treatment, some with treatment. I have also seen symptoms of a most striking kind relieved, especially by electricity. It is not a question of the size of the tumor, but of the presence of symptoms. If these cannot be relieved, an operation is indicated. But should it always be hysterectomy? Take Dr. Sutton's second case; I can see no reason for the removal of the uterus in that instance. I have had labor go on with uterine tumors present as large in the specimen shown, and with involution of the uterus after labor the tumors disappeared. I have seen a tumor disappear which was one of the largest solid tumors that had ever come under my observation. The woman was about forty years of age, was superintendent at an institution, and, since it was before the days of hysterectomy, I tried various injections, such as iron and iodine, which, I presume, did no good, yet the tumor slowly disappeared and the woman's abdomen diminished until she looked like a different person. I have seen tumors disappear with bilateral incision of the cervix; I have seen them disappear under elec-

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tricity, and I have seen a great many disappear without treatment. But I could not make the diagnosis and say which kind of tumor it was that disappeared. But why should we remove every fibroid? Men have said here that they have seen extremely small fibroids, that they have removed some which had taken twenty or thirty years to reach moderate size, while all have seen fibroids disappear. Are we, then, to operate simply because a fibroid is present? I would not care to see Fellows of this society put themselves on record as performing hysterectomy, no matter by what method, for every solid tumor of the uterus.

Dr. Edward E. Montgomery, of Philadelphia.—We have listened with a great deal of interest to these two papers, which have treated of the subject of the treatment of uterine fibroids from different standpoints. I would not feel like taking the ground which Dr. Gordon has done, or, at least, which I understood him to take, that every uterus which contains a fibroid tumor should be removed.

In those cases in which the tumor gives rise to symptoms calling for operative interference, it should be removed, if it projects into the uterine cavity, by a method which leaves the patient with a uterus having functional activity. If it is sub-peritoneal it may be enucleated through an abdominal incision and still leave the patient with a serviceable uterus. Dr. Gordon said that he had opened the abdomen to do ventral fixation, had found a small uterine fibroid, on account of which he modified the operation and removed the uterus. If one should do that in Philadelphia, extirpating an organ considered as valuable as the uterus, when it had been understood that only ventral fixation was to be done, I have no doubt that he would be brought promptly into court. Indeed, I have known this to happen because of the removal of ovaries and tubes which were destroyed by pus.

With regard to the method of removing tumors, I wish to call attention to a suggestion of Eastman's when the abdominal route is chosen. He simply uses one ligature on each side, ligating the ovarian arteries, then separating off the anastomosing uterine arteries with a blunt instrument. Sometimes he leaves a stump, sometimes he removes the entire uterus. He performed this operation during the recent meeting of the American Medical Association in this city, and very successfully.

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With regard to continuing prolonged palliative treatment for the relief of symptoms from uterine fibroids, there are patients who cannot afford to have this done. They would become paupers. Besides, they cannot remain away from their friends and families so long when, by a radical operation, they could be restored to lives of usefulness to themselves and others. So I would say that the truth lies between the two standpoints taken by the authors of the papers.

Dr. William T. Howard, of Baltimore.—Having heard only a part of Dr. Emmet's paper, I shall confine my remarks exclusively to it. Some years ago, being at the Woman's Hospital in the city of New York, I saw Dr. Emmet perform his operation. It is described in his book on gynecology. That was the first time I had ever seen it done, or had heard of it. After this, about ten years ago, a lady, forty-seven years of age, came to me with a large fibroid tumor. She was almost as pale as a cadaver, was bleeding very freely, and I did not think that she was in a condition to submit to a serious operation. It was for the purpose of diminishing the hemorrhage that I incised the cervix on either side very deeply, and gave her hypodermics of morphine to control the excessive pain. After a while, to my great surprise, a part of the tumor began to present at the os externum. It extended above the umbilicus, and felt as hard, some portions of it, as a board. I had no thought, whatever, of doing anything more then than attempting to relieve the hemorrhage; and with this object in view I curetted the uterus. The organ began to contract, and finally a portion of the tumor as large as my fist projected into the vagina. I seized that while the woman was under the influence of ether and pulled upon it, attempting to do the operation which Dr. Emmet has described. The operation, renewed at intervals, lasted perhaps a week. Little by little, as the mass came down, I removed it. Supra-pubic pressure was made on each occasion. Finally the whole tumor was removed in that way. The patient became perfectly well, and to-day is in the enjoyment of uninterrupted health.

About five years ago, a lady, thirty-six years of age, applied to me for bleeding, which I discovered was due to the presence

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of a fibroid. It extended a little above the umbilicus. I removed the ovaries for the purpose of arresting the hemorrhage. It did not, however, cease, and she returned to me after three or four months, stating that she had been bleeding ever since the operation. She had noticed a bad-smelling discharge from the vagina. Upon examination I found a fibroid growing from the fundus, as large, perhaps, as my two hands. I sent her to the hospital next day, and made traction on the tumor until the uterus was inverted, clipped the tumor off with a pair of scissors, replaced the uterus, washed it out with a five-per-cent. solution of carbolic acid, and tamponed with iodoform gauze. The woman got perfectly well, and has remained well to this day. Since treating that case I have been more careful in ascertaining the exact situation of the fibroid. Had I been as careful in that case when the patient first came to me as I am now, she might have her ovaries and tubes to-day.

Again, about three years ago, a lady from one of the Southern States applied to me for bleeding, which has lasted two or three years. The uterus was enlarged and retroverted. I replaced the organ, dilated and curetted, supposing that the bleeding was due to fungous growths. But, posteriorly there seemed to be some projection. The hemorrhage, however, did not cease, but continued, with a great deal of pain, that had not existed to any marked degree before. One morning I found a fibroid presenting at the os externum as large as my hand. I concluded to let it alone, and thought that it would project into the vagina in a few days. It so happened that the patient made a perfect recovery, and has since borne a child.

Dr. A. H. Buckmaster, of Charlottesville, Va.—I do not think that any one will question the advantages of making traction in removing fibroids who has seen Dr. Emmet work, or who has had much personal experience. There is, however, a very practical point which should be emphasized—that is, the necessity for taking proper means to make the diagnosis. In many cases no man can make the diagnosis of intra-uterine fibroid without sufficiently dilating the os. Therefore, it is my opinion that a man does not do justice to his patient who removes the uterus for fibroid without having thoroughly explored the uterine

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cavity. The distinction between mural and submucous fibroids cannot be made in many cases if the finger cannot be introduced into the uterine cavity.

The safety of Dr. Emmet's operation is very striking. If it is properly done, I believe that the mortality from the operation itself should be *nil.* I have seen patients who were in such a serious condition that they could not be raised in bed without fainting. One such patient had a fibroid removed which weighed four pounds, making perfect recovery.

We all know that there are other pathological conditions frequently associated with the fibroid, and, as death is often due to such conditions, the mortality statistics are not of great value.

In order to show the importance of exploring the uterine cavity, I recall an instance in which, two years ago, a gentleman presented a uterus at the New York Obstetrical Society that he had removed by abdominal section for a small fibroid. On examining the specimen as it was passed about, I found that it would have been perfectly easy to enucleate it.

Dr. J. Riddle Goffe, of New York.—In this very broad and full discussion it seems to me that there is one point which has not yet been mentioned—that is, the bearing of the age of the patient upon the operation. I am far from adopting the sentiment that every fibroid tumor discovered in the uterus demands the removal of the organ. However, a very small fibroid in a young woman, say thirty years of age, might demand removal of the uterus, when a tumor of the same size in a woman approaching the menopause would not. I have now under observation a number of patients between forty and forty-five years of age, with fibroid tumors, perhaps as large as a hen's egg, mural or subperitoneal, whom I cannot advise to submit to hysterectomy. I have curetted in some of these cases; I am watching all of them carefully, and I believe that I can carry them along without much expense or trouble. We all know that some tumors do grow after the menopause, but my experience has been that the majority of them diminish in size and cease to produce symptoms. So it seems to me that if we have small fibroids to deal with, the treatment should consist in nursing the patients along, relieving them of symptoms, but not removing the uterus unless the symptoms or the rapid growth of the tumor demands it.

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DR. GORDON.—Through fear that some one might say that I added it after closing the discussion, I shall read the last page of my paper which I had not the time to read before:

"Many operators can possibly remove the uterus more rapidly by their own methods, but the time necessary to secure all bleeding vessels and to complete the toilet will make the entire operation as long as mine. When I introduce my last suture the vessels are all secure, and the rest is rapidly finished. I have seen the uterus removed in ten minutes, but from half an hour to an hour was spent in getting the patient ready for bed. This I call 'playing to the galleries,' and is not scientific surgery. I find very little trouble from prolonged operations, provided that hemorrhage is avoided and prevented. With plenty of gauze and hot towels the intestines can be kept warm, and no shock follows from hours of exposure.

"In conclusion, I can only say that further experience and careful observation justify me in reasserting my belief, so strongly expressed two years ago, that in all cases in which a woman finds herself an invalid from a fibroid uterus, to the extent of seeking the advice of a surgeon, unless such a tumor can be safely and easily removed per vaginam, either by enucleation or morcellement, true conservative surgery demands hysterectomy, and, in my experience, I have found the abdominal method by far the preferable one.

"I expect criticism upon my method of operating by continuous suture, with catgut as the material. I think that I may safely say that it is entirely original with me, and therefore I am perfectly willing to submit to whatever discredit attaches to the method. It has served me well for ten years, at least, and several of my friends in the profession are abundantly satisfied with it."

Now, there is my position. I contend that no man can say that a tumor may not grow. Frequently it begins to grow at the menopause. Furthermore, I agree fully with Dr. Emmet in removing all those submucous fibroids through the vagina which can be removed in that way. I have thus removed many of them piecemeal, including one which weighed five pounds.

As to Dr. Sutton's statement that the financial condition of the patient should determine whether we ought to remove fibroids or

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not, I think that has nothing to do with surgery whatever. I select no cases. I apply this invariable rule: Poor or rich, high or low, in whatever condition of life they may be, when patients come to me suffering from a fibroid I advise hysterectomy unless I can remove the tumor through the vagina with sufficient ease. I think the fact that the case may look bad should not be considered. I would make no selection whatever. I operate upon all cases. If I cannot possibly get the tumor and uterus out I am sure that it is a case in which the patient had been advised ten or twenty years ago to wait, or something of that kind. I find comparatively few cases of submucous fibroids.

Now, in all cases such as Dr. Sutton's I would like to know how one can expect much change. Absorption does not take place. In one of the cases I would have enucleated the tumor outside of the uterus and left the pregnant uterus. That I have done two or three times.

I simply do not wish to be misrepresented; therefore, I read the last page of my paper.

Dr. Howard.—I think that the Society would be glad if some gentlemen would state their conclusions first.

Dr. Emmet.—I must lack the language to fully express my views, for all the gentlemen, except Dr. Buckmaster, have not really touched upon my paper at all. I have been for years misrepresented as being opposed to the removal of the uterus. It is nonsense for any man to hold such a view. There are certain cases in which we must all agree, that if there is anything to be done, the uterus must be removed. I have stated distinctly my belief that the truth lies in the middle course, and that each extreme is wrong. It was from that standpoint that I wished to express my views.

From my observation I believe that fibroids have their genesis near the mucous membrane, where functional activity is the greatest, and that they work outward in consequence of some interference, while the rule is, if a single growth exists, for it to advance toward the canal and to become pedunculated. If there are a number of small fibroids, as well as a large one, the larger will always be crowded out toward the peritoneum, because they break up about them the rhythmic contraction of the

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uterus. If there is a single growth in the uterus, as I have stated, it will invariably be crowded toward the uterine canal. That is one point which I wished to impress as being of great importance.

But the main point of my paper was that the uterus should not be removed until the canal had been dilated sufficiently for the introduction of the finger, that the operator might form some idea of the position of the tumor. Dr. Buckmaster cited an instance of extirpation of the uterus in which the tumor could have been enucleated and the woman spared hysterectomy. I recall a similar one in which I could have separated the tumor from the uterus with a finger-nail. It is not polypi to which I refer. We all understand that these can be removed without difficulty through the vagina. But I wish to state that in every case in which I can reach a fibroid from within the canal I cut down on it and remove the growth by traction. All I ask is to dilate the canal for a reasonable time. Keep the patient with a fibrous growth under observation, for no one can tell beforehand what can be done in a large number of these cases until the canal has been dilated for a considerable time. I hold that, instead of removing the uterus off-hand at the beginning, we can, in a great many cases, cause these tumors to become pedunculated, so that hey can be removed by the vagina, or they can be removed by traction, and the women will remain well afterward. I have certainly seen a number of women who have borne children after the removal of fibrous growths weighing many pounds, and who have remained perfectly well afterward.

If we are to follow the rule laid down by many to-day we shall be obliged to take the uterus out in all such cases. All I ask is to give reasonable time to dilate the uterus and to see if it is possible to remove the tumor and to save the organ. It will doubtless be necessary in some cases to do hysterectomy. But the question is yet an unsettled one, whether it should be done by the abdominal or by the vaginal method. My own preference is to open the abdomen, since this is the method suited to the greater number of cases.



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# CATGUT FOR LIGATION OF THE PEDICLE.

By Archibald MacLaren, M.D.,
*St. Paul, Minn.*

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We must all admit that on account of its absorbable properties catgut is the ideal ligature and suture material. The difficulty, however, of rendering it sterile has led to a very limited use of this material by more careful surgeons. Most of us have in the past used catgut which we had sterilized according to different methods, trusting that at last the problem had been solved, but only to be again disappointed.

The best results have been procured probably by using catgut which was first soaked in ether to dissolve the fat, then boiled in alcohol, and later soaked in a 1 : 500 bichloride solution in alcohol. But even when this method was used we had to agree with Hunter Robb when, in his late article on gynecological technique, he says: "Catgut would be an almost ideal material for sutures, but unfortunately we have as yet no thoroughly reliable method of rendering it sterile."

With many others I had entirely given up the use of catgut for silk until eighteen months ago, when Dr. Edward Boeckman, of St. Paul, presented to the St. Paul Medical Society his combination steam and dry sterilizer, and described his method for the dry sterilization of catgut, showing at the same time a long series of bouillon and agar-agar cultures of catgut both before and after sterilization.

By Dr. Boeckman's method the catgut is cut into desirable lengths, wrapped in waxed paper, then sealed in small

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envelopes and raised in the sterilizer to a temperature a little above 284° F., and kept at that temperature for four hours. All ordinary pus germs are killed at a lower degree of temperature, but the spore-bearing germs, particularly anthrax, so common in the intestine of the sheep, from which catgut is manufactured, are only killed by this high and protracted degree of heat. That catgut prepared in this way is sterile has been proven by innumerable culture tests as well as by the personal experience of all my friends who have used it. Among the minor points in favor of this method are its economy and the convenience with which it may be carried; a few of these small envelopes may be placed in the pocket-book, always ready for any surgical emergency.

Dr. C. A. Johnston, of Grand Rapids, Mich., describes in the April number of the *American Journal of Obstetrics* a method used by Krönig, of Leipsic, which is based upon what seems to me sound bacteriological principles. He boils his catgut in cumol, a coal-tar oil, the boiling point of which is 170° Centigrade. Theoretically, I should say that this method would render catgut sterile, and Dr. Johnston reports that the catgut so prepared is serviceable and followed by none of the ordinary bad results of silk. Even if this method produces catgut which is absolutely sterile, I should still prefer the gut prepared by dry sterilization, if for nothing else, on account of the greater ease and convenience in carrying as well as the greater danger of infection of catgut which is kept in any liquid preparation.

My experience with the various ligature bottles for carrying catgut and silk in liquids has been very unsatisfactory; they all leak and the ligaturas become infected, even though they were originally sterile. Turning our attention now to pedicle ligatures: one objection to a non-absorbable material, such as silk, is that even though the silk may be perfectly sterile before it is put into the abdomen, it is at times impossible to prevent its becoming infected, as, for instance, when

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removing a pus-tube or a suppurating ovary, or occasionally when using it for an intestinal suture. As drainage is usually used in such cases, little harm results; the sinus is delayed in closing, however, until the last ligature loosens and comes away, and even then a chronic sinus may continue to discharge until it is opened and the granulation is removed. This happened to me recently, and it was found necessary to perform such an operation eighteen months after the removal of an appendix. A long sinus led down to the peritoneum, not through it, still continued to discharge months after the last particle of silk had come away, a continuous silk suture having been used to bring the edges of the peritoneum together.

Dr. Polk, in his very excellent article on pelvic inflammations in Keating and Coe's *Clinical Gynecology*, advises against the ligation of the tubes even in radical removal of the appendages, because, as he says, "the ligatures are so often infected through the stump of the tube that in place of being innocuous they become a source of irritation and inflammation, leading to many vexatious symptoms" even if "the ligature be applied at the cornu, as the writer has found to his cost." In the preceding paragraph Dr. Polk advises the use of either silk or catgut for the ligation of the ovarian vessels and the mesosalpinx. I venture to say that Dr. Polk has probably had much more trouble of this nature when silk has been used than when catgut ligatures were employed. It seems more reasonable to believe that the source of infection was the suppurative disease for which the operation was performed rather than a later infection from the stump of the tube. I most heartily agree with Dr. Polk's principle of conservative surgery of the appendages, but I do not understand that this is in the line of that conservatism, but it is only applied to the removal of inflamed or purulent tubes. I cannot see why the ligature should not be safer from infection from the stump of the tube when the stump is tightly

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constricted. The mucous lining of the tube is always surgically unclean, or so supposed to be, and should therefore be at once seared over with a Paquelin cautery, as is the custom, I believe, with almost all surgeons. Dr. Polk's theory in this regard, however, is not nearly so far-fetched as that of the Chicago surgeon, who ascribes the suppuration about the ligature and long-standing sinuses to the effects of the gonococcus in distinction from other pus germs. This seems to me to be a serious relapse into the Noeggerathian darkness of bacteriological pathology. To illustrate the trouble which at times follows the use of silk I shall report a few cases which may prove of interest:

CASE I.—Last winter Dr. Charles McBurney reported to me a case in which he had recently opened a pelvic abscess and evacuated a large quantity of pus and removed a silk pedicle ligature. This case had been operated upon several months before by another New York surgeon who had removed the appendages.

CASE II.—In June, 1893, Dr. C. A. Wheaton, of St. Paul, removed a suppurating ovary from Miss R., aged thirty years, at St. Luke's Hospital. On July 6, 1893, in Dr. Wheaton's absence I opened a large pelvic abscess, in this case through the vagina, removing the pedicle ligature at the same time, and introduced a rubber drainage-tube, after which she promptly recovered.[1] In regard to the cleanliness of the silk used in this last, as well as the succeeding cases, which I shall report, I will say that I have every reason to think that it was absolutely sterile. It was either first boiled for several hours, then immersed in a 1 : 500 bichloride solution, and again boiled for at least half an hour in the instrument-tray just preceding the operation; or in the later cases it was prepared by the Johns Hopkins formula of sterilization in live steam for half an hour on three successive days, and then preserved in sterilized alcohol.

CASE III.[2]—Mrs. W. T. L., St. Paul; consultant, Dr. P. E. Jones, of Red Wing, Minn. Operated upon for pyosalpinx, combined with an ovary of the right side containing two pints of clear serous fluid, at St. Joseph's Hospital in St. Paul, on

[1] Case No. 99, Northwestern Lancet, May 1, 1895.
[2] Case No. 114, Northwestern Lancet, May 1, 1895.

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August 13, 1891. Mrs. L. recovered and left the hospital in a little over three weeks, but she was far from cured, and was only able to be out of bed for a few days at a time. Examination several months after the operation showed a tender, fixed uterus with an inflammatory mass about the right uterine cornu about the size of a lemon and resembling a pyosalpinx. On November 7, 1893, over two years after the first operation, I again opened the abdomen and discovered an abscess cavity at the right uterine horn, containing one ounce of pus and the pedicle ligature floating loose in the pus. The abscess cavity was sponged out and drained with a strip of gauze; the sinus soon closed and in six weeks she was perfectly well for the first time in nearly three years.

CASE IV.[1]—On October 28, 1893, I operated upon Mrs. H. H. T., for Dr. Ogden, of St. Paul, and removed a multinodular fibroid uterus by supravaginal amputation, after Baer's method, enucleating from the left broad ligament a large subperitoneal fibroid; on account of the oozing from the large cavity in the left broad ligament I used a gauze drain. Three months after the operation, the patient having in the meantime suffered a great deal of pain, an abscess opened into the vagina, just at the left of the cervical stump, and discharged several ounces of pus and the silk ligatures used on that side. After this she promptly recovered.

CASE V.[2]—On September 14, 1893, I operated upon Mrs. C. H. S. for Dr. John Rogers, of St. Paul. Supravaginal amputation of a very large multinodular fibroid uterus. One year after this operation I saw her again with Dr. DeWitt. She gave at that time symptoms of intestinal obstruction. As the symptoms soon subsided, we were of the opinion that the trouble had been fecal impaction. She lost flesh, however, complained of a great deal of pain, and could not work. About six weeks ago I sent her to the City Hospital, and on May 5th discovered a small abscess pointing into the vagina just at the left of the cervical stump. From this abscess I removed two silk ligatures; as her temperature did not abate, I later made an exploratory cœliotomy and discovered a second small abscess at

[1] Case No. 106, Northwestern Lancet, May 1, 1895.
[2] Case No. 140, Northwestern Lancet, May 1, 1895.

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the summit of the left broad ligament at the site of the ligature, which was applied to the ovarian vessels, just outside of the appendages. No silk was found in this abscess, however; it probably escaped observation in the pus when the abscess was opened. Her temperature now dropped to normal, and I trust that she will soon be entirely cured. In this last case, at the time of the original operation, no drainage was used, and the case did well for nearly a year. In both this and the preceding case the ligatures could not have been infected from the tube in the manner which Dr. Polk describes, because both appendages were removed with the uterus, the ovarian vessels being ligated just outside of the ovary and tube.

CASE VI.[1]—Mrs. Van D. For Dr. Sutherland, of Morris, Minn., I removed a simple ovarian cyst, at St. Joseph's Hospital, on October 25, 1892. One year after the operation, so Dr. Sutherland informed me, this patient had an attack of pelvic inflammation; this was relieved by the discharge from the rectum of a quantity of pus, containing blood and silk ligatures. She promptly recovered and was entirely cured at the time of the last report.

CASE VII.[2]—Mrs. S. Operated upon for Dr. Camp, of Brainard, Minn., June 3, 1892. Vaginal hysterectomy for carcinoma uteri. During the next six months or more Mrs. S. was very much distressed by suppuration about the silk, which had been used to control the hemorrhage from the broad ligaments at the time of the operation; she was eventually entirely relieved of this trouble by the discharge of all the silk ligatures.

CASE VIII.—Mrs. J. M. D. Operated upon for Dr. Jeannette MacLaren, of St. Paul, at St. Joseph's Hospital, May 18, 1894, in which I removed a small multilocular ovarian cyst. Two months later I opened a small abscess at the left uterine horn, when she promptly recovered, and is now perfectly well.

The last case of this nature which I have to report followed the use of a catgut pedicle ligature, but it was not properly sterilized; this was the first case in which I used catgut, and the sterilization was attempted in a sterilizer sur-

[1] Case No. 89, Northwestern Lancet, May 1, 1895.
[2] Case No. 136, Northwestern Lancet, May 1, 1895.

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rounded by a water jacket in which it was only possible to get a maximum temperature of 210°.

The closure of peritoneal fistulæ is sometimes very slow, following the use of silk, as, for example, in the case of Mrs. C., from whom I removed a very large kidney for Dr. P. Ritchie, of St. Paul, on April 14, 1893. Her operation was done through the anterior incision; the kidney ruptured during enucleation, flooding the abdominal cavity with pus. Mrs. C. is now very well, having gained over thirty pounds in weight, but is mentally very much distressed over the continued discharge of a small fistula left in the track of the gauze drain; two silk ligatures have already come away.

Again, Mrs. F., operated upon April 29, 1894, for Dr. A. Sweeney, of St. Paul, for double pyosalpinx. The operation was followed by irrigation and gauze drainage. Two silk ligatures have already come away, but the sinus still continues to discharge. That there should be no question as to the honesty of my statistics, I reported to the St. Paul Medical Society, six weeks ago, where the cases and the consultants are known, a list of my abdominal work during the past two years, in an article entitled "One Hundred and Twenty-five Consecutive Abdominal Operations." Most of the cases which I have already cited are in that article, and I have given them the corresponding numbers on that table.

In the last sixty cases of that list I used catgut ligatures only, and in each case a continuous catgut suture to bring together the peritoneal edges of the abdominal wound. I will submit for publication a list of seventy-three consecutive abdominal operations in which catgut only has been used. My conclusions from my experience of the past year have been very satisfactory. There have been no deaths that could in any way be ascribed to catgut; mural abscesses, which, during the use of silk for pedicle ligatures and continuous suture of the peritoneum, were not uncommon, even in non-suppnrative operations, have entirely disappeared in this class of cases. The suppurations which so often complicate drainage cases still occur with the use of catgut, but

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they are of a much shorter duration, though I now use two buried sutures in closing the abdominal wall where I formerly used but one; fistulæ have closed much more quickly, and the ultimate comfort of the patients has been very much better. I have certainly seen very few cases in which vaginal hysterectomy for pelvic suppuration could have improved upon either the immediate or the secondary results. Looking at this list of cases, there are six deaths in seventy-three cases. One died on the tenth day from pneumonia—pelvis dry and clean. One died on the tenth day from the persistent vomiting of a chronic gastritis; no hemorrhage; no peritonitis. One died three months after the removal of a suppurating ovary, from the effects of a vesico abdominal fistula. Two died from shock —one in six and one in twenty-four hours. For operations done to relieve deep pelvic collections of pus, which could not be reached through the vagina, one died of septic peritonitis, from the rupture during removal of an extra-uterine gestation sac containing a necrotic fœtus and placenta. In every fatal case the pelvis was carefully examined to make certain that hemorrhage or sepsis about the ligature had not occurred, and in not one case was such a condition found.

In addition to my own cases, Dr. Robert Wheaton, of St. Paul, who for several years acted as my assistant, reports to me that he had used catgut for pedicle ligature in fifteen cases, with one death, the death not due to catgut. Dr. John Rogers, who was also an assistant of mine, has operated upon ten cases without a death.

Dr. Edward Boeckman, to whom we are indebted for this catgut, tells me that he has used catgut upon at least twenty pedicles without a death. Dr. F. Dunsmore writes me that he has used this catgut in ten abdominal cases without a death. Dr. C. A. Wheaton tells me that he used this catgut for all abdominal work for the past eighteen months, with the greatest satisfaction, having no death which he could ascribe to the influence of catgut; that his results are very much better than with the use of silk.

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## TABLE OF CATGUT LIGATIONS IN ABDOMINAL OPERATIONS.

| No. | Date. | Name and physician. | Age | Children. | Miscarriages | Disease. | Operation. | Drainage. | Results. |
|---|---|---|---|---|---|---|---|---|---|
| 140 | May 18 1894 | Mrs. J. M. D. Dr. J. MacLaren. St. Joseph's Hosp. | 25 | 1 | ... | Multilocular ovarian cyst as large as Florida orange. | Ovariotomy. Pedicle ligated with catgut, 210° sterilized. Dr. J. MacLaren. Curettement. | No | Recovered. No. 147. |
| 141 | May 22 1894 | Mrs. L. Dr. H. Bissell. St. Luke's Hosp. | 37 | 6 | 2 | Retroflexion. Laceration of cervix and perineum. | Coeliotomy. Ventro-fixation. Dr. Bissell performed trachelorrhaphy and perineorrhaphy. | No | Recovered; June 25, 1894, very much improved. |
| 142 | June 21 1894 | Miss M. O. Dr. E. Strain. Minot, N. D. St. Luke's Hosp. | 36 | 1 | ... | Carcinoma of cervix. Erysipelas toxins injected by Dr. De Witt for past month. | Vaginal hysterectomy. Heavy catgut ligature, 280° sterilization. | No | Recovered; no report. |
| 143 | June 22 1894 | Mrs. S. Dr. J. MacLaren. St. Luke's Hosp. | ... | 1 | 2 | Retroflexion; adherent; endometritis. | Ovariotomy. Left tubo-ovarian cyst as large as a hen's egg. Right hydrosalpinx. Both removed. | No | Recovered. |
| 144 | July 3 1894 | Mrs. A. D. Dr. A. O. Beal. St. Luke's Hosp. | 30 | 2 | ... | Double hydrosalpinx. Both appendages very much diseased. | Coeliotomy. Both appendages very densely adherent. Both removed. | No | Recovered; cured. |
| 145* | July 7 1894 | Mrs. F. Dr. J. MacLaren. St. Luke's Hosp. | ... | ... | ... | Multilocular ovarian cyst of right side. Left hydrosalpinx. | Coeliotomy. Both appendages strongly adherent. Removed. Broad ligament badly torn. | Gauze | Recovered; Mar. 1, 1895, sinus closed; cured. |
| 146 | July 10 1894 | Mrs. E. L. F. Dr. J. MacLaren. St. Luke's Hosp. | 50 | 4 | ... | Profound anæmia. Constant flowing. Several curettings. | Abdominal hysterectomy. Baer's method. Uterus small. | No | Recovered; very much improved. |
| 147 | July 18 1894 | Mrs J. M. D. See No. 140. | 25 | 1 | 2 | Large inflammatory mass about left stump. Rising temperature and pulse. | Coeliotomy. Small abscess about left horn of uterus; opened and drained. | Gauze | Recovered; cured. |
| 148 | July 21 1894 | Mrs. B. Dr. T. H. Johnson. St. Joseph's Hosp. | 52 | 1 | ... | Tubo-ovarian abscess; at least 8 oz. of pus. Left hydrosalpinx. | Both appendages removed. Right abscess ruptured during enucleation. Irrigation and drainage. | Gauze | Recovered; Nov. 15, 1894, sinus closed; cured. |
| 149 | Aug. 23 1894 | Half-breed Indian. City Hosp. patient. | 26 | ... | ... | Right pyosalpinx and suppurating ovarian tumor; left appendage adherent. | Both appendages removed. Irrigation and drainage. | Glass | Recovered; very much improved. |
| 150 | Aug. 28 1894 | Mrs. F. W. Dr. Moloy, St. Cloud. St. Luke's Hosp. | 32 | ... | ... | Intestinal fistula, following laparotomy, Nov. 29, 1890, for double pyosalpinx; glass drainage. | Coeliotomy. Murphy button in small intestine. Suture of large intestine; silk. Fecal abscess behind sigmoid; drained. | Gauze | Recovered; fecal matter discharged from fistula sixth day; button passed from bowel fourteenth day; unimproved. |

* Ligatures of catgut, sterilized by dry heat of 284° Fahr., used on all cases after No. 145.

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| 151 | Sept. 2 1894 | Mrs. L. H. P. Dr. F. J. Cressy, St. Luke's Hosp. | 30 | 1 | 1 | False labor pains every night; erotic dreams constantly. Nearly insane. | Both appendages removed. Right ovary twice as large as normal. Has recently been curetted. | No | Recovered; no better until both pudic nerves were divided; now cured |
| 152 | Sept. 8 1894 | Mrs. T. F. M. Dr. Smalley, Hector, Minn. St. Luke's Hosp. | 40 | ... | ... | Ovarian cyst, filling lower abdomen. In bed for past ten days. Peritonitis. | Ovariotomy. Cyst. Very long pedicle, twisted three times. Adhesions all over cyst. | No | Recovered. |
| 153 | Sept. 16 1894 | Mrs. B. Drs. Cressy and Stratton, Granite Falls. St. Luke's Hosp. | 55 | 4 | ... | Ovarian tumor filling entire abdomen; weight 50 lbs. | Ovariotomy. Tumor almost solid. Incision 14 inches long. Dense adhesions. | No | Recovered; tedious convalescence; discharged cured Nov. 15, 1894 |
| 154 | Sept. 17 1894 | Mrs. W. B. H. Dr. Hunt. Northfield, St. Joseph's Hosp. | 33 | ... | ... | Ovarian cyst as large as child's head; right pyosalpinx. | Both appendages removed. Irrigation and drainage. | Glass | Recovered; small mural abscess at site of drain; cured. |
| 155 | Sept. 20 1894 | Mrs. J. C. Private patient. St. Luke's Hosp. | 47 | ... | ... | Procidentia, third degree; plastic operation at Dr Bissell's hospital, March 8, 1890. | Cœliotomy. Ventro-fixation. Two buried silkworm-gut sutures. Appendages both adherent. Separated. | No | Recovered; Mar. 20, 1895, cured; no pain; good position. |
| 156 | Sept. 26 1894 | Mrs. A. C H. Dr. I. Wear, Fargo. St. Luke's Hosp. | 30 | 3 | ... | Fibroid uterus as large as child's head; very painful. | Supra-vaginal amputation of uterus. Calcareous fibroid. | No | Recovered. |
| 157 | Oct. 1 1894 | Miss S. Dr. C. E. Riggs. St. Luke's Hosp. | 40 | ... | ... | Chronic ovaritis; several attacks of pelvic peritonitis; chronic gastritis. | Cœliotomy. Both appendages, which were practically normal, removed. | No | Recovered; Feb. 1st died of chronic gastritis; autopsy, Dr. Brigham. |
| 158 | Oct. 13 1894 | Mrs. E. J. H. Dr. H. Johnson, St. Paul. St. Luke's Hosp. | 51 | 1 | 2 | Carcinoma of cervix and a little on post-vaginal wall; pain, tenderness, hemorrhage. | Vaginal hysterectomy. Difficulty in enucleating disease in right side. | No | Recovered; Dec. 20, 1894, mass in right broad ligament. |
| 159 | Oct. 20 1894 | Mrs. N. M., Pine Bend. Dr. T. De Witt. St. Joseph's Hosp. | 30 | 1 | ... | Ovarian cyst, right as large as adult head. | Both appendages removed. Right cyst contained clotted blood. Left ovary as large as a goose-egg. | No | Recovered; Dec. 20, 1894, does all her own work; cured. |
| 160 | Oct. 20 1894 | Mrs. J. K. Dr. Smalley, Hector, St. Luke's Hosp. | 45 | 2 | ... | Multinodular fibroid uterus, flooding for several months. | Baer's amputation of the uterus. | No | Recovered. |
| 161 | Oct. 27 1894 | Mrs. L. H. Dr. J. H. Dorsey. Glencoe. St. Luke's Hosp. | 29 | 1 | 1, 3 yrs. sick. | Left tubo-ovarian abscess closely adherent to both large intestines and bladder. | Cœliotomy. Suppurating ovary removed. Five catgut sutures in large intestine. Bladder apparently sound. Irrigation. | Glass 48 hrs. gauze. | Died Jan. 31, 1895; bladder opened; urine discharg'd through; wound could not be closed; died of exhaustion. |
| 162 | Nov. 3 1894 | Mrs. J. Private patient. St. Luke's Hosp. | 30 | ... | ... | Ventral hernia following cœliotomies three and five years ago by Dr. C. A. W. | Cœliotomy. Omental hernia adherent. Two continuous catgut sutures, and interrupted silkworm-gut in skin. | No | Recovered; March 20, pain no better. |

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| No. | Date. | Name and physician. | Age | Children. | Miscarriages | Disease. | Operation. | Drainage. | Results. |
|---|---|---|---|---|---|---|---|---|---|
| 163 | Nov. 10 1894 | Miss O. Dr. Beebe, St. Cloud. St. Luke's Hosp. | 35 | ... | ... | Chronic appendicitis; enlarged right ovary. | Cœliotomy. Appendix bound to under surface of cæcum. Removed. Right ovarian cyst removed. | No | Recovered; improved. |
| 164 | Nov. 22 1894 | Mrs. C. C F. C.E.Riggs, consult., St. Paul, St. Luke's Hosp. | 44 | ... | ... | Uterine hemorrhage; both ovaries removed July 5, 1892. | Supra-vaginal amputation of uterus. | No | Recovered; Mar. 20, 1895, very much improved. |
| 165 | Nov. 24 1894 | Miss C., Dr. Dunning, St. Paul, St. Luke's Hosp. | 30 | ... | ... | Double pyosalpinx following gangrenous cervical polypus. | Cœliotomy. Both appendages removed. Both tubes contained about one drachm of pus. Irrigation and drainage. | Glass 48 hrs. gauze | Sinus closed twenty-fifth day. Recovered; Mar. 20, 1895, doing almost all her work. |
| 166 | Dec. 1 1894 | Mrs. John L. McC. Dr. Aylen, Sheldon, N. D. St. Luke's Hosp. | 40 | ... | ... | Multinodular fibroid; uterus as large as child's head. | Supra-vaginal amputation of uterus. Both appendages enlarged, diseased, and adherent. | No | Recovered. |
| 167 | Dec. 2 1894 | Mr. Thos. K. Dr. R Jackson, Faribault. St. Joseph's Hosp. | 69 | ... | ... | Carcinoma of rectum, deep and diffuse. Patient not very strong. | Inguinal colotomy. Cancerous mass in pelvis much larger than was supposed. | No | Recovered; Dec. 17, 1894, discharged from hospital; improved. |
| 168 | Dec. 5 1894 | Mrs. John J. Dr. T. F De Witt, St. Paul. St. Luke's Hosp. | 30 | 1 | ... | Ovarian cyst, complicating pregnancy at second month. | Ovariotomy. Left unilocular cyst. Right appendage removed. Pregnancy 2½ months. | No | Recovered; Mar. 20, 1895, pregnancy not interfered with. |
| 169 | Dec. 8 1894 | Mrs. A. B. City Hosp. patient. | 27 | 3 | 1, 3 wks. ago. | Left pyosalpinx; 2 drachms of pus. | Cœliotomy. Left appendage removed; pus-stained; few active germs. Irrigation. | Gauze | Recovered; sinus closed quickly. |
| 170 | Dec. 15 1894 | Mrs. M. K. City Hosp. patient. | 22 | 1 | ... | Ovarian cyst; right as large as Florida orange. | Ovariotomy. Multilocular cyst of right ovary; very adherent. Left tube clubbed, containing bloody, purulent fluid. | No | Recovered; severe bronchitis for one week. |
| 171 | Dec. 16 1894 | Miss V. Dr Daigneau, Austin. | 24 | ... | ... | Recurrent appendicitis; several attacks; last two weeks ago. | Cœliotomy. Appendix closely bound down by strong adhesion. Chronic appendicitis. Stump covered. | No | Recovered; Feb. 17, 1894, at work and feeling very well; cured. |
| 172 | Dec. 19 1894 | Mrs. L. S. M. Consultant, Dr. DeWitt, St. Paul. | 26 | ... | ... | Pyosalpinx, perhaps opening into bowel. Has had gonorrhœa. | Cœliotomy. Double pyosalpinx; leaking, septic peritonitis. Adherent appendix. Examination of pus; numerous micrococci. | Glass and gauze | Sinus closed one month. Recovered; much improved. |
| 173 | Dec. 22 1894 | Mrs. S. A. City Hosp. patient. | 32 | ... | 1, 4 yrs. ago. | Double hydrosalpinx; cœliotomy July 1st. Opening and draining of pelvic abscess. | Cœliotomy. Right hydrosalpinx. Cystic ovary as large as a goose-egg. Left hydrosalpinx. Few adhesions. | No | Recovered, Feb. 9, 1895; no pelvic pain; does her own work, cured. |

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|---|---|---|---|---|---|---|---|---|---|
| 174 | Jan. 1 1895 | Mrs. A. W. C. Private patient. St. Luke's Hosp. | 45 | 3 | ... | Multinodular fibroid uterus. In bed for several months; pressure symptoms. | Baer's supra-vaginal amputation of uterus. | No | Died Jan. 10, 1895. Constant vomiting of chronic gastritis; no peritonitis. |
| 175 | Jan. 5 1895 | Mrs. B. S. City Hosp. patient. | 44 | 10 | 1 | Complete procidentia. Laceration of cervix and perineum; small fibroid. Cannot work. | Vaginal hysterectomy by morcellation and blunt dissection, anterior colporrhaphy and Emmet's perineorrhaphy. | No | Died Jan. 15, 1895, pneumonia; no peritonitis. |
| 176 | Jan. 8 1895 | Miss J. H. City Hosp. patient. | 25 | 2 | 1 | Tubercular salpingitis; strong adhesions. | Both appendages removed. Irrigation and drainage. | Glass | Recovered. |
| 177 | Jan 8 1895 | Mrs B O. B. City Hosp. patient. | 40 | Several. | ... | Pyosalpinx puerperal. Last child three weeks' old. Curetted eighteen days ago. | Coeliotomy. Intraperitoneal abscess connecting with pyosalpinx. Four ounces of thick pus. Irrigation and drainage. | Glass and gauze | Sinus closed in seventh week. Recovery protracted and very tedious; cured. |
| 178 | Feb. 5 1895 | Mrs. G. O. B. Dr. Dampier. Crookston. | 45 | Several. | ... | Ovarian cyst right; left ovary also cystic. | Coeliotomy. Right cyst as large as adult head. Very dense adhesions. | No | Recovered; cured. |
| 179 | Feb. 16 1895 | A. L. City Hosp. patient. | 24 | 1 | ... | Left hydrosalpinx. Right appendage closely adherent. | Coeliotomy. Left tube contained 3 ounces of serum. Removed. Right appendage not removed. | No | Recovered; April 5, very much improved. |
| 180 | Feb. 16 1895 | Mrs. John L. No. 92. | ... | ... | ... | Ovarian cyst, complicating pregnancy. | Ovariotomy. Two months pregnant. Conceived when the ovary was as large as fœtal head. | No | Recovered; pregnancy not interfered with. |
| 181 | Feb. 22 1895 | Mrs. J. E. R. Dr. Dunning, St. Paul. | 35 | ... | ... | Double hydrosalpinx; endometritis. Wishes to conceive. | Left ovary cystic and left hydrosalpinx removed. Right tube liberated. Opened, washed out, and not removed. | No | Recovered. |
| 182 | Feb. 23 1895 | Mrs. J. V. Dr. C. L. Clark. White Bear. | 28 | 7 | ... | Suppurating dermoid tumor of right ovary. | Ovariotomy. Adhesions very dense. Irrigation. | Glass and gauze | Sinus closed fifth week; recovered. |
| 183 | Feb. 23 1895 | Mrs. K. Dr. H. Johnson, St. Paul. | 41 | 3 | ... | Multilocular ovarian cyst. | Ovariotomy. 35 lbs.. cyst adherent to under surface of liver and to gall-bladder. | No | Recovered. |
| 184 | Feb. 23 1895 | Mrs. A. C. City Hosp. patient. | 34 | 1, two weeks ago. | ... | Pelvic cellulitis; septic endometritis. Has been curetted (blunt) twice. | Coeliotomy. Both appendages normal. Curettement, sharp. Much broken-down tissue; gauze packing. | No | Recovered. See No. 191. |
| 185 | Feb. 27 1895 | Mrs. S. E. B. Dr. H. M. S Stover, La Moure, Dak. | 32 | 3 | 1 | Retroflexed uterus. Uterus and appendages fixed and painful. | Coeliotomy. Dense adhesions broken. Right appendage torn and removed. Left not removed. Ventro-fixation. | No | Recovered. |
| 186 | Mar. 2 1895 | Mrs. D. H. Dr. A. O. Beal, St. Paul. | 36 | 1 | 1, sick ever since. | Tubo-ovarian abscess. Much emaciated; acute delirium last two days. | Coeliotomy. Deep tubo-ovarian abscess as large as Florida orange. Left pyosalpinx. Both appendages removed. | Gauze | Died 28 hours after operation; exhaustion; autopsy; no hemorrhage; pelvic cavity dry and clean. |
| 187 | Mar. 9 1895 | Miss L. N. City Hosp. patient. | 26 | 1 | 1 | Pyosalpinx; right as large as my thumb; small ovarian cyst. | Coeliotomy. Right appendage removed. | No | Recovered. |

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| No. | Date. | Name and physician. | Age | Children. | Miscarriages | Disease. | Operation. | Drainage. | Results. |
|---|---|---|---|---|---|---|---|---|---|
| 188 | Mar. 12 1895 | Miss L. C. Dr. Brigham, St. Cloud. | 18 | ... | ... | Tubercular salpingitis right. Right ovary as large as hen's egg. | Cœliotomy. Right appendage removed. Strictured appendix removed. | No | Recovered. |
| 189 | Mar. 13 1895 | Mrs. G. D. G., Miles City, Mont. | 32 | 2 | ... | Retroflexion fixed; endometritis. | Cœliotomy. Left ovary resected. Ventro-fixation. Two buried silkworm-gut stitches. | No | Recovered; cured. |
| 190 | Mar. 14 1895 | Mrs. C. W. W. Little Falls. Dr. B. Walrath. | 30 | ... | ... | Ruptured, extrauterine gestation. Rupture seven weeks ago; in bed ever since. | Cœliotomy. Free peritoneal cavity not opened. Pus and broken-down blood-clot; placental tissue. | Rubber tube. | Recovered. |
| 191 | Mar. 16 1895 | Mrs. A. C. (No. 184). City Hosp. patient. | 34 | 1 | ... | Pelvic cellulitis. Great prostration. | Cœliotomy. Ovaries and tubes both normal. Abscess opened through vagina. | No | Recovered; cured. |
| 192 | Mar. 22 1895 | Mrs. J. V. T., Austin. Dr. Dalgman. | 41 | ... | ... | Chronic salpingitis; tubes adherent. Endometritis. | Cœliotomy. Adhesions broken up. Curettement and gauze packing. | No | Recovered. |
| 193 | Mar. 23 1895 | Miss L. A. City Hosp. patient. | 18 | 1 | ... | Chronic salpingitis; dense adhesions. | Cœliotomy. Both appendages liberated and removed. | No | Recovered. |
| 194 | Mar. 30 1895 | Miss B. McD. Dr. B. Walrath, St. Paul. | 18 | ... | ... | Tubercular salpingitis; tubercular peritonitis and ascites. | Cœliotomy. Both appendages removed. | Glass | Recovered. |
| 195 | Apr. 6 1895 | Miss T. M. F. Dr. Henderson, St. Paul. | 35 | 3 | ... | Double suppurating dermoids. Very much prostrated. | Cœliotomy. Double dermoids, size of Florida oranges. | Glass and gauze | Recovered. Fecal fistula closed on 24th day. |
| 196 | Apr. 6 1895 | Miss J. B. City Hosp. patient. | 25 | ... | ... | Double hydrosalpinx; has recently had gonorrhœa. Prostitute. | Cœliotomy. Both tubes and ovaries removed. Each tube the size of a goose-egg. | No | Recovered. |
| 197 | Apr. 10 1895 | Mrs. C. E. L. (No. 120) Dr. McLain, Hillsboro. | ... | ... | ... | Intestinal adhesion to the back of uterus, where sponging gauze had probably escaped into intestine. | Cœliotomy. Adhesions separated; one silkworm-gut suture removed from the uterus. Uterus well attached by long pedicle to anterior abdominal wall. | No | Recovered. Very much improved. |
| 198 | Apr. 11 1895 | Mrs. S. Dr. Tollington, Clearwater. | 26 | 1 | ... | Suppurating ovarian right side; multilocular ovarian on left. | Cœliotomy. Both ovarian tumors removed. Abscess ruptured. Irrigation. | Glass and gauze | Recovered. Sinus closed in three weeks; cured. |
| 199 | Apr. 12 1895 | Mrs. Charles H. Dr. A. J. Gillette, St. Paul. | 30 | 2 | ... | Tubercular peritonitis; tubercular abscesses; large cheesy nodules in omentum. | Cœliotomy. Separation of omentum. Abscess opened, filled with iodoform, and drained. | Gauze | Recovered; May 7, 1895, sinus still discharging; very much improved. |
| 200 | Apr. 13 1895 | Mrs. F. S. I. Dr. Chas. Green, St. Paul. | 26 | 1 | ... | Hæmatosalpinx; laceration of cervix; endometritis. | Cœliotomy. Adhesions of right appendage separated. Left appendage removed. Curetted and packed. | No | Recovered. |

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| 201 | Apr. 13 1895 | Miss M. S. Dr. B. Walrath, St. Paul. | 21 | ... | ... | Peritoneal cavity normal; suspected tubercular inflammation. | Cœliotomy. An artificial vesico-vaginal fistula made last September. | No | Recovered. May 1, opened a pyonephritic abscess. |
| 202 | Apr. 16 1895 | Mrs. O. F. W. Dr. Whitney, St. Paul. | 26 | ... | ... | Tubo-ovarian abscess; right as large as Florida orange. Chronic sepsis. | Cœliotomy. Suppurating ovary and tube removed; very offensive pus. Nearly died on table from exhaustion. | Gauze | Recovered. |
| 203 | Apr. 18 1895 | Mrs. L. B. W. Dr. Tollington, Clearwater. | 34 | 2 | ... | Extrauterine gestation; high temperature. | Fœtation sac rupture; necrotic fœtus and placenta. | Gauze and glass | Died on third day, septic peritonitis; ligature in place; no hemorrhage. |
| 204 | May 3 1895 | Miss F. B. City Hosp. patient. | 17 | ... | ... | Tubercular peritonitis; double tubercular salpingitis; necrotic omentum. | Cœliotomy. Omental tissue removed; both appendages, which were cheesy, removed. | Glass and gauze | Recovered. Sinus still open. Aug. 1, 1895, died of general tuberculosis. |
| 205 | May 10 1895 | Miss M. H. City Hosp. patient. | 43 | ... | 3 | Double hydrosalpinx; small fibroid uterus. | Cœliotomy. Both cystic tubes removed. | No | Recovered. Improved. |
| 206 | May 14 1895 | Mrs. C. H. S. No. 108. | 38 | 2 | ... | Intraperitoneal abscess from silk; vaginal abscess opened last week. | Small abscess at summit of left broad ligament opened. | Yes | Recovered. Improved. |
| 207 | May 14 1895 | Mrs. E. D. Dr. Hanley, St. Paul. | 19 | ... | ... | Double pyosalpinx; married three months; gonorrhœa. | Both suppurating appendages removed, ruptured. | Glass and gauze | Recovered. Cured. |
| 208 | May 18 1895 | Mrs. I. K. Dr. H. Day, Eau Claire. | 40 | 2 | ... | Ovarian cyst. | Cœliotomy; ovariotomy. | No | Recovered. |
| 209 | May 18 1895 | Miss K. W. Dr. H. Bissell, St. Paul. | 17 | ... | ... | Ovarian cyst, complicated with true perityphlitic abscess entirely in mesentery of the cæcum; no connection with the bowel. | Cœliotomy. Cyst removed; abscess ruptured into peritoneal cavity; considerable hemorrhage. | Glass and gauze | Died in six hours; acute sepsis, and shock from hemorrhage. |
| 210 | May 23 1895 | Miss D. Dr. Dunning, St. Paul. | 23 | ... | ... | Tubercular peritonitis; double tubercular pyosalpinx. | Cœliotomy. Omentum loosened; ascitic fluid sponged out; both appendages removed. | Glass and gauze | Recovered. |
| 211 | May 24 1895 | Mrs. S. E. B. No. 185. | 32 | 3 | 1 | Inflamed cystic left ovary. | Cœliotomy. Cyst as large as an orange removed; uterus firmly attached. | No | Recovered. |
| 212 | May 24 1895 | Miss F. (prostitute) City Hosp. patient. | 21 | ... | 1 | Right pyosalpinx; two weeks ago produced an abortion on herself. | Cœliotomy. Right appendage removed; abscess ruptured during enucleation. | Glass and gauze | Recovered. |
| 213 | May 25 1895 | Mrs. S. G. W. Dr. Darrow, Fargo. | 39 | ... | ... | Multinodular fibroid uterus profuse hemorrhage; very anæmic. | Supra-vaginal hysterectomy. | No | Recovered. |

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## DISCUSSION.

DR. A. PALMER DUDLEY, of New York.—I shall repeat what has already been said, but I wish to say that catgut can be used with as much freedom from bad results as any other kind of ligature or suture. I have been using it since 1885, and I have yet to see suppuration from its employment in the pelvis. I have used it a great many times in operations for extra-uterine pregnancy, fibroid tumors, ovarian cysts of various sizes, and I have yet to see suppuration occur as a result of the introduction of catgut. In fact, it is unusual for my operations to be followed by suppuration of any kind. I have abandoned any method of my own in the preparation of the catgut. I leave that entirely to those who are expert in that line.

In the first years of my experience with catgut I did get suppuration, and I laid it to my inability to thoroughly sterilize the material. Therefore, I left the sterilization to those who could do it and who were doing it. I have finally settled down to the use of catgut prepared by one firm in New York, which I regard as perfectly safe, namely, Van Horn & Ellison. They were the first in our country to prepare catgut for surgical use. I found that they treated it by a method very much like that described in Dr. MacLaren's paper. After washing all fat from it they place it in a solution of alcohol and raise it to a temperature of 250° F. Any germ which will live through a temperature of 250° F. I am willing to risk in the tissues. I use catgut prepared in this manner in all cases. In order to compare it with silk I shall mention a case. Four years ago I operated on a physician's wife in New York City for suppuration of the left tube, and, not feeling that I had knowledge enough of catgut, I used fine silk. About two months ago the doctor brought to my office, carefully stored away in a little bottle, the silk which I had put into the left broad ligament, and which had escaped four years later. Such accidents do not happen with catgut.

Catgut should be used as a continuous suture. I do not believe that it is a safe material to use as an interrupted suture. It will

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untie, and one is liable to have hemorrhage, so I make it a rule never to use it as an interrupted suture.

DR. WILLIAM M. POLK, of New York.—It seems that I have placed myself in a vulnerable position, and the doctor has taken his first shot at me. All I can say is that I believe he is standing upon the wrong platform. The possibility exists that I failed to make myself clear in the paragraph quoted. What I had in mind was the cutting of the ligature into and through the tube—which is by no means so uncommon an accident as the doctor thinks—and the infection caused thereby. And I made that the ground for my recommendation. Further experience has strengthened me in that view.

The question of catgut versus silk, will, I presume, continue to be brought up from time to time, and the fight will be on the lines indicated. Indeed, the question has been at issue since the introduction of the procedures under discussion, and I would hail with delight any process which would enable me to use catgut with entire satisfaction. The methods mentioned, as well as that of Dr. Boldt, tempted me to try it. But I did not get that encouragement in results which I had hoped for. In making two operations, in one using catgut, in the other silk, it was found that the one with silk resulted perfectly, the one with catgut failed; yet examination of the samples from which the catgut was taken revealed no germs whatever. Such an experience dumfounded me. I could not see what was the cause of the trouble. The work which I did was equally good in both cases, yet the use of silk was followed by no ill results, while the use of catgut gave bad results.

Under these circumstances I am compelled to reach the conclusion reached by Dr. Rice, Chemist of the Department of Charities and Correction, who has the preparation of the catgut used in hospitals in New York which accommodate about twelve thousand patients, and whose experience, therefore, is much greater than that of most men. That conclusion is that you cannot sterilize all catgut. That there is some which will always give you trouble, and you cannot tell by examination which is the good catgut and which is the bad. I infer from Dr. Rice's experience, as well as from my own, that whenever we use catgut it must be with the distinct understanding that we may have suppuration. There-



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fore, I use it to as little extent as possible. We all recognize its great advantages, and each and all of us would drop silk if we could be convinced by Dr. MacLaren or anyone else that we would not get into some bad predicament at some time when we least expected it. I cannot imagine anything more destructive of one's courage than to set to work with all the elaboration which is possible under the present management of our institutions, and feel conscientiously that he has carried out every detail demanded by the highest ideal, and then, on account of a miserable piece of catgut, have the entire result a failure. It is demoralizing. I have had just such an experience; I did a piece of conservative work on what I deemed a good case, and the woman died of purulent inflammation of the ovary from the use of catgut.

Our methods may be wrong, but they are very nearly the same as the author has described. And as to the catgut Dr. Dudley speaks of, it has given me some of the worst results.

THE PRESIDENT asked Dr. Polk whether the catgut which he had used in the trial cases had been examined bacteriologically, and Dr. Polk having replied in the affirmative, and stated that it was free from bacilli, the President then asked how he knew that the unfavorable result was due to the catgut.

DR. POLK.—Because there were two cases treated under precisely the same conditions, except that in one I used catgut, in the other silk. Where catgut was used there was suppuration; where silk was used there was none. This occurred not in only one case, but in five different instances, and I may add that I pursued every step which a conscientious desire for the best results could demand.

THE PRESIDENT.—Allusion has been made to my using catgut. I have used it pretty steadily for ten or twelve years, during which time I have probably left two or three thousand pieces in the abdomen, and I cannot say that I have ever seen any ill result which I could directly attribute to the catgut. Dr. Polk, in his cases attributed the bad result to the catgut. He may be perfectly correct, but if the catgut was found, on bacteriological examination afterward, quite free from germs, it seems to me that his deduction is hardly justified.

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DR. POLK.—That depends upon whether you tie yourself absolutely to the theory that only germs can produce inflammation.

DR. HOWARD A. KELLY, of Baltimore.—I have not used catgut in the abdomen for over two years, after losing three patients in whom the post-mortem examinations seemed to show that death was due to the catgut. Unfortunately, however, no gut was left over after the operation, to be tested bacteriologically.

I believe that we now have a means of perfectly disinfecting catgut in cumol, boiling at a temperature of 165° C., but I have not felt the necessity of returning to catgut, as I have employed very fine silk, and have never had it come out except in one instance, a tuberculous case, with a drain and a sinus.

DR. MACLAREN.—Dr. Polk's explanation would change my criticism entirely. I do not think that we can compare any other methods of preparing catgut with Dr. Boeckman's, because they are based on unscientific grounds. I would except boiling in cumol, which raises the temperature high enough to kill all the germs. By all the other methods, as far as I have been able to learn, strands of the gut are found in which there are living spores. The preparation which I have described is the result of scientific treatment, and I believe will give the best of results in all cases.

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# THE PRESENT TREATMENT OF UTERINE DISPLACEMENTS.

By Paul F. Mundé, M.D.,
*New York.*

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Unquestionably the greatest progress in gynecological therapeuties during the last ten or fifteen years has been made in the domain of diseases of the uterine appendages and tumors of the uterus. The most brilliant achievements of modern surgery have been gained in removing diseased appendages, ovarian tumors, or the uterus, together with its fibrous neoplasms; and to emulate these successes of the leaders in this province of surgery is the great aim of the majority of our young gynecologists. The proceedings of our medical societies and our medical journals teem with reports of successful or new operations of this kind, and naturally the interest of the whole profession is attracted more to this class of cases than to the comparatively common-place ailments which I propose to discuss in this paper. And still I think I am justified in calling the attention of this Society, and through it of the profession generally, to the changes which have taken place during the last decade in the views held and the practices followed by gynecologists as to the significance and treatment of displacements of the uterus.

Although not of vital importance, like the majority of the diseases of the uterus and appendages referred to, displacements of the uterus are still so frequent and so often productive of evil influences upon the women afflicted with them

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that they form not only a very common variety of cases for which the physician is consulted, but also call for positive and effective treatment. In former years a very much greater importance was attached to these displacements of the uterus than is now the case. In the older books, even down to editions issued within the last four or five years, we find many pages devoted to the etiology, pathology, symptoms, and treatment of uterine displacements, the majority of these symptoms being attributed entirely to the malposition of the organ, and the treatment being usually directed chiefly to its restoration and maintenance in the normal position. This statement applies not only to displacements backward and downward, but with equal force to those forward—that is, anteflexion and anteversion—for the treatment and cure of which innumerable complicated contrivances have been devised. Thus in Dr. Thomas's well-known and at that time deservedly popular *Text-book on Diseases of Women*, fifth edition, 1880, we find given the following symptoms of anteflexion: "Pain over epigastrium and in groins and back, irritable bladder, leucorrhœa, dysmenorrhœa, sterility, nervous disturbance and despondency, pain on locomotion, menorrhagia, tendency to abortion, pain on sexual intercourse, pelvic neuralgia, sense of depression at the epigastrium;" besides other more or less obscure reflex signs. Under anteversion we find a much smaller array of symptoms, the chief of which are dysmenorrhœa and sterility produced by the pressure of the os against the posterior vaginal wall, irritable bladder, rectal irritation and tenesmus; further, inability to walk. At that time we all, relying upon this great authority, blindly accepted his statements without using our own judgment as to whether or not all these symptoms were actually due to the displacement and distortion of the uterus. As a result of this supposed train of agonizing sufferings we find in the edition mentioned, as well as in those preceding it, descriptions and cuts of a large number of exceedingly complicated vaginal pessaries devised

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solely for the purpose of lifting up and straightening out the anteverted or anteflexed uterus. Dr. Thomas himself has told me that he has spent many a sleepless night working out the problem of these mechanical contrivances, and where now are all these wonderful appliances? Cast aside, hidden away in drawers which are scarcely ever opened, or else consigned to the ash barrel. I use this strong language only to emphasize the change which has taken place in our views during the last fifteen years—yes, even during the last five years—on this subject of the significance and pathological importance of anterior displacements of the uterus. It is chiefly in regard to these anterior displacements that so great a change has taken place in our recent opinions and practice. Increasing experience has taught us that the symptoms of anteflexion, even of the major degrees, are practically *nil;* that an anteflexion of the third degree, for instance, manifests its presence in the virgin and nulliparous woman, if indeed it does so at all, by dysmenorrhœa; in the married woman by sterility, and even in the major degrees of anteflexion these results are very frequently absent. The minor degrees produce practically no symptoms whatever. In anteversion such symptoms as present themselves are scarcely ever due to the anteversion itself, which is by far a less frequent displacement than was formerly supposed. It is true that occasionally we meet with an anteversion, pure and uncomplicated, of such a degree that the fundus rests directly upon the symphysis pubis, and the cervix is tilted high up into the excavation of the sacrum. Then of course distressing pressure on the bladder, and perhaps more or less irritation of the upper portion of the rectum, are produced by the displacement; but I really do not believe that I have seen more than two or three such extreme cases of anteversion in the last fifteen years.

Whenever there are any decided local symptoms caused by an anteversion we may be sure that a downward displacement of the organ—that is, a prolapsus of the first degree—

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is associated with it, and this prolapsus is the element in the case to which the symptoms must be attributed. If we find a woman with anteversion and prolapsus in the first degree, unable to walk or remain long on her feet, it must be our object to elevate the whole uterus, together with as much of the vaginal walls as may also be prolapsed, rather than to merely attempt to lift the fundus away from the bladder. Pessaries for anteflexion and anteversion are therefore now but rarely used. I have hundreds of them, mostly of the type devised by Dr. Thomas, lying stowed away in drawers in my office which are never opened except when I wish to demonstrate to my students the instruments which were formerly used, and which are now practically obsolete.

For anteflexion I may say that I never use nowadays an intravaginal supporter. None that I know of will elevate the anteflexed fundus properly, none will straighten out a sharply flexed uterine canal, and, as I have already mentioned, their only possible indication would be for either dysmenorrhœa or sterility, in neither of which instances they would be effective. We relieve the dysmenorrhœa, and perhaps also the sterility, by dilating and straightening the uterine canal, keeping it straight by intrauterine stems (if we approve of them, which I do not say that I do, except on rare occasions), and we keep the canal wide by repeated packing with sterilized or iodoformized gauze. In this way we cure dysmenorrhœa usually, sterility frequently, and that is all that the anteflexion calls for.

In anteversion with prolapsus we confine ourselves chiefly to relieving the prolapsus, and this I have found to be best done, so far as any vaginal support is concerned, by the pessary devised by Dr. Eugene C. Gehrung, of St. Louis, with which I have many years' experience and without which I would really not know what to do in cases of anteversion, and prolapsus, and cystocele. It is in my estimation the only vaginal instrument which will keep up a prolapsed

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anterior vaginal wall and bladder comfortably and without injury to the patient.

Now, of course, the question will be asked, How is it that so astute an observer as Dr. Thomas, and with him so many others, in recent times were so misled as to attribute all the symptons mentioned to the anterior displacement? It may not be easy to answer this question in a manner exactly satisfactory to everybody. To me the reason seems perfectly plain, since many of the symptoms complained of were due not to the version or flexion, but to the concomitant catarrhal conditions of the uterus and tubes, to chronic enlargement of the uterus, so-called hyperplasia, induced by the catarrhal, or by subinvolution, and to a certain amount of relaxation of the uterine supports and pelvic floor. To the relief and cure of these concomitant conditions should have been directed, and probably were also unconsciously directed in those days, the therapeutic efforts which benefited the patients. The pessaries played very little if any part in the improvement.

What I have said of anterior displacements does not, however, apply by any means in an equal degree to the posterior and downward displacements of the uterus. While a uterus may be retroverted or retroflexed to the first, second, and even third degree without producing any local or general symptoms whatever, this I hold to be rather the exception than the rule. A retroversion of the first degree, in which the body of the uterus occupies the same horizontal plane as the vagina, or at least not more than an angle of 135°, produces actually no symptoms whatever, except that possibly it may be a cause of sterility, especially if the external os is unusually small. A retroversion of the second degree also probably gives no special discomfort; but a retroversion of the third degree, in which the axis of the vagina and that of the uterus are at a right angle, certainly does in the majority of instances exert pressure enough upon the lower portion of the rectum to interfere with free defecation and give rise to congestion of the rectum and hemorrhoids. If in each of

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these degrees of displacement a flexion instead of a version exists the amount of discomfort to the patient will be proportionately increased. If the displacement occurs in a virgin or in a nulliparous married woman the uterus is small, and at least for a time no local or general effect follows the displacement. In the course of time the ovaries, however, very frequently follow the body of the uterus into the pelvic cavity and lie at the bottom of Douglas's pouch, where they may eventually become adherent and give rise to decided inconvenience. If the woman has borne children and the backward displacement is the result of parturition, in consequence of relaxation of the pelvic supports and subinvolution of the uterus, I think it is the exception for such a displacement of a major degree to exist for a year or longer without giving rise to the usual symptoms of this condition, namely, bearing down, sensation of dropping and weight in the pelvis, sacralgia, inability to stand or walk any distance. Finally, I do not think that I am exaggerating when I say that it is the exception for any well-marked backward displacement of the uterus to exist without, after a lapse of time varying in different cases from several months to several years, a chronic enlargement of the organ taking place, together with chronic endometritis, which materially increases the discomforts of the patient. In addition to the chronic congestion of the organ and the possible prolapse and adhesion of the appendages, the fundus uteri in old cases very frequently becomes adherent to the opposing surface of Douglas' pouch, and reposition of the organ then becomes impossible except by a more or less complicated and dangerous operation.

I would not have dilated so much upon these well-known symptoms of backward displacement of the uterus had I not wished to compare the significance of this displacement with the anterior variety first referred to, and I found it necessary to do this in order to explain why I consider retroversion and retroflexion to be pathological conditions usually requiring rectification.

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As little as I use vaginal supports for anterior displacements, I have found such mechanical means—of a different variety, of course—indispensable for backward displacements. I know pessaries to be a necessary evil, and nevertheless I find myself obliged to employ them daily. It is simply the question in my mind of choosing between two evils—either to allow the patient to go unrelieved, or else to elevate her uterus and keep it in position by a pessary. This, of course, does not cure her, but at least she is benefited so long as she wears the support. One might as well compel a patient with a lame leg to stay in bed or be confined to a chair, for the want of a crutch or cane, as to deprive a woman of the ability to walk and be comfortable simply because one does not approve of pessaries. Of course they must be properly fitted and adapted to each individual case, and I am perfectly aware that this is not always easy and requires some practice and perseverance. As I have already stated, pessaries do not cure displacements; at least, if they do, they do so only in a minority of cases. I see that Dr. Davenport, at the last meeting of this Society, agreed substantially with the views which I enunciated in a paper read before the International Medical Congress in London in 1881, on the "Curability of Uterine Displacements," in which I stated that I had cured by pessaries only 5.5 per cent. (that is, seven out of one hundred and twenty-seven cases) of backward displacement. Davenport compiles the statistics of five observers (Mundé, Löhlein, Fränkel, Sänger, Davenport), in all five hundred and eighty-four cases, with fifty-two cures by pessaries, or a little over eleven per cent. I do not think that in the fourteen years which have elapsed since I wrote this article my results with pessaries as regards the permanent cure of backward displacements have been any better than I then stated, and still I continue to use pessaries for want of anything better.

Before leaving the subject of pessaries I wish to state that I have used for the last ten years, or thereabout, only one

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variety of pessary for anteversion and prolapsus—namely, the Gehrung—and for retrodisplacements of the uterus the various modifications of the lever pessary of Hodge as devised by Albert Smith, Thomas, Noeggerath, and myself; these modifications consisting mainly in lengthening or broadening the instrument and increasing or diminishing its curves, and for cases of retroflexion adding a bulb to its post-cervical end. Further, I shall state that I use only instruments made of hard rubber or some other hard, unalterable substance. In place, therefore, of the numerous complicated pessaries which were formerly described, the number now thought necessary by me for the satisfactory treatment of uterine displacements is narrowed down to two chief varieties and three or four modifications.

It still remains for me to discuss one form of displacement —namely, prolapsus. So far as any palliative treatment of this condition is concerned, I am not aware that anything new has been devised in recent years. Thure Brandt, it is true, has claimed to have cured some of the most inveterate cases of complete prolapsus of the uterus and vagina by his peculiar method of massage, and Schultze, Profanter, and a few others have reported similar successful results ; but this method of pelveo-genital massage has not become popular in this country with either physicians or patients—a fact which, on reflection and considering the highly sensitive character of the majority of our ladies, does not seem particularly surprising. So far as my experience goes, the number of mechanical supporters which were formerly recommended in the text-books and sold by instrument-makers, retail and wholesale, has been materially reduced, very much to the benefit of the patient's health and pocket. The majority of such cup-and-stem instruments—that being their usual character—rarely kept the prolapsed uterus and vagina in place satisfactorily, and sooner or later caused ulceration. They never effected a cure; in fact, I do not know of any instrument which has ever cured a vaginal and uterine pro-

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lapsus except by producing so deep an ulceration and resulting cicatrix as to retain the prolapsed organs in the pelvis.

Astringent tampons, rest in bed, local faradization, and massage are all too troublesome, tedious, and uncertain methods to induce us to employ them very generally.

So far all that I have said only shows the progress in recent years in the more correct appreciation of the significance of uterine displacements and a curtailment of the palliative methods of treatment. If this were all the progress that had been made in this particular line it would still be worth accepting and recording. But a great deal more has been done.

Not satisfied with the imperfect results obtained by pessaries in retrodisplacements, and with the view of permanently curing such cases, various surgical methods have been introduced and very extensively practised during the last ten or fifteen years.

1. The most prominent of these operations is that rediscovered by Dr. William Alexander, of Liverpool, and now known by his name. It consists in opening the inguinal canal on either side of the symphysis pubis, picking up the round ligaments of the uterus, drawing them out as far as they will go in each individual case, cutting off the surplus, and stitching the remainder of the ligament into the canal. The fundus uteri is then approximated more or less to the anterior abdominal wall and is lifted out of the pelvis, an anteversion being substituted for the retroversion or retroflexion for which the operation was performed. Absolute mobility of the uterus and appendages, with an entirely healthy condition of the latter, are the essential requisites for this operation. I have performed Alexander's operation now seventy-seven times—that is, on seventy-seven patients—and have, with but three or four exceptions, succeeded in finding the ligaments without any great trouble, drawing them out, and stitching them into the wound. I was, I believe, the first to perform this operation in this country, on the 12th of De-

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cember, 1884. I have had the opportunity to see a large number of the patients again, and so far as my own personal observation goes I have not seen a single failure—that is to say, a single case in which the ligaments were properly brought out and attached where the uterus became again retroverted. Several of the patients have conceived, have gone to term, and been confined, the uterus retaining its proper position. In some of these instances several pregnancies occurred, and I had the opportunity to satisfy myself that in two cases after the fifth pregnancy following the operation the uterus still remained anteverted. While I admit the difficulty of finding the ligaments in some cases, I must still contend, as I have persistently done whenever discussing this point, that an absolute failure to find the ligamants is always the fault of the operator. Any carelessness in following anatomical landmarks may result in such a failure. On the other hand, no one can foretell either the thickness of the ligaments or the possibility of drawing them out, since they are not infrequently very thin and adherent in the canal and may be broken during traction. This is the one drawback, in my opinion, to this operation, and the only one. I have seen no bad results, no deaths follow it; nothing more, indeed, than now and then some suppuration. Hence I do not think that I can be blamed for speaking so highly of the operation, as I have done over and over again since I first learned how to perform it.

2. Owing to the difficulty, in the hands of certain operators, attending the finding of the ligaments by Alexander's method, and feeling that with our present surgical asepsis such a course was devoid of danger, a number of operators, notably Wylie, Palmer Dudley, and Mann, have opened the abdominal cavity, drawn up the fundus uteri, and shortened the round ligaments by doubling them upon themselves, and stitching them thus doubled to the anterior wall of the uterus. I have done this operation but twice, and have been fairly well satisfied with it. Still I do not think it is justi-

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fiable to open the peritoneal cavity for this purpose only, except when it is found necessary to detach the adherent uterus and appendages and in order to be able to elevate the fundus uteri. A healthy condition of the appendages in spite of their adhesion must be considered essential to this indication. I have lately had occasion to examine a case of this kind which was operated upon by Dudley, in which I found the uterus well anteverted, but tilted much further to the right than was normal. Apparently the right round ligament had been shortened more than the left. I cannot quite agree with the latter gentleman, however—provided that he really made the statement which the patient claims he did—that the operation was of so trifling a nature as hardly to be worth calling it an operation. I can never consider the opening of the peritoneal cavity to be an entirely trifling operation.

3. Ventral or anterior fixation, hysterorrhaphy or hysteropexy, are the names given to the attachment of the fundus uteri to the anterior abdominal wall by means of sutures, the abdomen having been opened in the median line, the fundus uteri and appendages lifted out of the pelvis and brought up against the incision. This operation was first devised by Sänger, Schröder, and Olshausen; later on modified by Howard Kelly, Leopold, and Klotz. I do not pretend to be correct in awarding the priority to any one of these gentlemen, since it is quite possible that several of them may have adopted the idea simultaneously. Although I have performed this operation twelve times, I have never been able to quite satisfy myself that it was justifiable to subject a woman to the risk of abdominal section for the cure of an entirely harmless affection such as retroversion or retroflexion. I lost but one of the twelve patients, it is true, and that from heart failure owing to enormous tympanites, the operation having been done for prolapsus; but this one death was quite sufficient to deter me from a further employment of the method. Of course, when the append-

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ages were removed, the uterus being retrovorted or prolapsed, I have always employed the practice of stitching the pedicles into the abdominal wound. These cases I do not include in the twelve of true ventral fixation. Only when the appendages are adherent and can still be preserved and the uterus is retroverted or prolapsed do I consider it justifiable to open the abdominal cavity and stitch the fundus to the abdominal wall. I do not think it logical to substitute an immovable anteverted uterus for a movable retroverted organ, hence I do not think that ventral fixation can in any way be compared with or substituted for Alexander's operation or any method of shortening the round ligaments. Besides, we must consider that if pregnancy should supervene, with the fundus attached to the anterior abdominal wall, there may be an interference with the normal development of the uterus, and premature delivery may take place. At least this did occur in one of my cases, where the woman after the fourth month complained of severe pains in the line of the cicatrix, and finally during the fifth month labor came on. I know that there are quite a number of cases reported in which pregnancy went to term in spite of the ventral fixation of the uterus; I do not, therefore, intend to deny that this may occur, but it is logical to fear premature delivery in such cases. Such a fear is not justified in shortening of the round ligaments by Alexander's or the internal methods, since during the growth of the uterus in pregnancy the ligaments adapt themselves to the increasing elevation of the organ. Many of our best operators in this country are, I think, gradually receding from their former preference for ventral fixation and returning to the ranks of the supporters of Alexander's operation or its modifications.

4. Following the practice very recently introduced by some Continental operators—Jacobs, of Brussels, and Péan, of Paris—of doing everything through the vagina that can possibly be done through that passage, in preference to the abdominal wall, Polk, chief of all, has recently reported a

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number of cases in which he has opened the posterior vaginal and peritoneal pouch, detached the adherent uterus and the appendages with his fingers, drawn the appendages into the vagina for examination, and, finding them sufficiently normal to warrant their retention, has elevated them and the uterus and retained them by shortening the round ligaments according to Alexander's method; he then closed the opening in the posterior *cul-de-sac* and vagina. I am not sure who else has done this operation, and therefore do not mention names, but am under the impression that it has been done in New York by other gentlemen with decided success; and I must say that I think it exceedingly ingenious and practical and far preferable to the detachment of the uterus and appendages through the usual anterior abdominal incision. I especially commend the retention of the uterus and appendages in their normal position by the shortening of the round ligaments through the inguinal canal rather than by attaching the fundus to the anterior abdominal wall, as is the practice in hysterorrhaphy. I shall certainly take the first opportunity to test the merits of this new procedure.

5. Schücking a number of years ago recommended anteflexing a retroflexed uterus by carrying a needle armed with a silk thread through uterine canal and fundus (the organ being previously anteflexed manually) and between the uterus and bladder into the vagina. The two ends of the silk were then tied and the uterus thus kept in this new position until the adhesion between the anterior peritoneal surface of the fundus uteri and the vesico-uterine pouch took place. He reported a number of successful cases, but the profession has never taken up this method, simply for the reason that it seemed not only risky, but also mechanically illogical, in that an immovable anteflexion was substituted for a movable retroflexion—certainly not a very desirable substitution.

6. More recently Mackenrodt, of Berlin, has devised and enthusiastically recommended another method based on a

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similar mechanical principle, but differing in its execution, which consists in opening the anterior vaginal pouch, pushing up the bladder, bringing the fundus uteri down into the space thus made between the bladder and uterus, and attaching it there by deep stitches passed through the vaginal walls. The same logical objection to the substitution of an immovable anteflexed uterus for a movable retroflexed one applies to this operation. While I have never performed it, or that of Schücking, I still feel myself justified in condemning it, if on theoretical grounds only, as anatomically bad and illogical. If I am criticised for condemning what I have not myself performed, I can only say that I might as well be condemned for opposing decapitation for a headache, or amputation of the penis for gonorrhœa. Both of these latter procedures I certainly have never performed and never shall perform for the conditions named, any more than I propose to do either Schücking's or Mackenrodt's operation for retroflexion.

7. There have been other plastic operations invented for the cure of retrodisplacements of the uterus, which were based on the principle of stitching the cervix to the posterior vaginal wall with the object of thereby throwing the body of the uterus forward. The late Dr. James B. Hunter proposed such a method, but it was found impracticable thus to antevert the uterus, and these methods were abandoned.

So far as our present status in these operative measures for the cure of backward displacements of the uterus goes, I think that the opinions between the shortening of the round ligaments and ventral fixation remain about evenly divided. The new method of vaginal detachment of the adherent uterus and appendages and Alexander's operation seems to me to be the coming one for those cases in which the organs are adherent.

Now to come finally to prolapsus uteri, which is almost invariably associated with the descent of one or both vaginal walls, together with more or less hypertrophy of the



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supravaginal portion of the cervix, the operations for these conditions are of much greater age than those for retrodisplacement. I shall not go back to ancient history, but shall merely refer to the plastic operations of Carl Braun in Vienna twenty-five years ago, and those of Simon, of Heidelberg, of about the same date—two surgeons who were the Nestors of plastic gynecological surgery in Germany at that time. Since then the operations for prolapsus uteri et vaginæ have become so numerous that it may be said that almost every operator of prominence has a method of his own—Bischoff, Fritsch, Martin, Hegar, Freund, among the Germans; Lefort, Pozzi, Doléris, among the French; and Thomas, Emmet, Wylie, Polk, and myself, among the Americans. I really cannot give the names of all those who have invented, or claim to have invented, peculiar methods for the cure of prolapsus. Practically they all mean the same thing and are all based on similar principles—namely, reduction in size of the uterus, retention of the organ in its normal position in the pelvis, and, finally, constriction of the vaginal walls and restoration of the perineum. Therefore, either amputation of the cervix if it is elongated, or trachelorrhaphy if it is torn and hypertrophied, ventral fixation or Alexander's operation, constriction of the anterior vaginal wall by Stoltz's, Emmet's, or Sims's method, and of the posterior vaginal wall by Hegar's or Emmet's method, which latter implies also restoration of the perineum—this is, in brief, the combination of operations which, more or less modified according to the ideas of different operators, is nowadays employed for the radical cure of prolapsus uteri et vaginæ. These plastic operations, while constricting the vagina, do not, however, propose to completely close that canal, and are therefore applicable to women who are still in the child-bearing period and who are subject to their marital duties. Unfortunately these very conditions in many instances prevent a permanent cure, no matter how perfect the result of the plastic operations may have been

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when the stitches were removed, since coition and subsequent parturition are more than liable to bring about a return of the dilated vagina and the prolapse of its walls and of the uterus. It is therefore one of the rules to be inculcated upon such women as strenuously as possible that pregnancy should not again take place.

It has remained for one of the younger gynecologists to devise within the last two years a most ingenious operation for the complete cure of prolapsus, which operation is, however, restricted to women who have passed the childbearing period, or by whom, at least, the marital function is no longer to be performed. This operation consists in encircling the vaginal walls, beginning as near the cervix as possible, by stout silver-wire sutures which are inserted at the median line of the posterior vaginal wall and carried entirely around until they meet in front, a needle being used at each end of the wire. The suture is then twisted as tightly as possible without tearing out, and the ends are turned down and cut short. The next suture is introduced about half an inch below the first, proceeding from within outward, and is twisted in a similar manner. Stitch after stitch is thus inserted and twisted until the whole vaginal canal is narrowed down to the vulva, care being taken to so place the stitches that their ends will not irritate the neighboring parts. The last stitch practically closes the vulvar orifice, leaving only a small canal about the size of an ordinary lead pencil for the exit of secretions. It must be remembered that the sutures must be applied with the vagina and uterus replaced, not prolapsed, although the first two stitches may be introduced for the sake of convenience around the external os with the uterus prolapsed; but before twisting the first stitch the uterus must be returned into the body. The patient is put in bed and kept there for a few days until any possible chance of reaction has passed away, and is then allowed to get up. Her confinement in bed scarcely exceeds a week, and need not even reach that. The stitches are, of course, to remain,

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and that is the novel and ingenious part of the scheme. They remain as permanent splints. I have performed this operation three times within the last twelve months—twice at the Mount Sinai Hospital and once last summer in Hanover, N. H.—in all with perfect success. In the Hanover case I was obliged to use strong copper-plated iron wire, there being no sufficiently strong silver wire on hand. This made the introduction of the sutures very much more difficult and entailed some laceration of the tissues which otherwise would not have taken place. Still the patient was up within one week after the operation, and went home at the end of the second week, claiming that she had not felt so comfortable for ten years, since which time she had the prolapsus. In two of the cases I found that after a time some of the lower stitches cut a little and required retwisting and shortening of the twisted ends. There was absolutely no reaction in any of the cases. I consider this to be the ideal operation for prolapsus; but unfortunately, as I have stated, it is restricted to a comparatively limited number of cases. We shall therefore always be obliged to perform the combination of operations which I have described in women who are still in the child-bearing period. The perfectly ideal operation for the cure of prolapsus uteri et vaginæ which will enable the woman to bear children afterward, precisely as though she never had a prolapsus, has still to be invented.

Removal of the entire prolapsed uterus has been performed a number of times and may be perfectly justifiable if it seems to offer the only reasonable prospect for a cure. It will usually be necessary to remove also the larger part of the prolapsed vagina. I have not yet met with a case in which I considered it imperative to perform this operation. Inversion of the uterus is not within the scope of this paper.

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# VENTROFIXATION *VERSUS* ALEXANDER'S OPERATION.

By A. Lapthorn Smith, M.D.,
*Montreal, Canada.*

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It is unnecessary to take up the time of such learned men as those around me in proving the necessity for this or some other operation for the cure of retroversion. When I state that I have performed Alexander's operation only twenty-one times and ventrofixation twenty-eight times in the last five years, while during that time I must have attended many hundreds of cases of this displacement, it is evident that I have considered only a small number of them as being fit subjects for operative treatment. Many cases have come under my notice in which the displacement was discovered accidentally and caused no symptom whatever. Others suffered from slight symptoms, but were easily cured simply by replacing the displaced organ and by removing the cause which brought about the condition. Others again failed to be cured by such simple measures and required the prolonged use of the tampon or the pessary. It was only in cases which were not benefited by this means that I resorted to the operation. If there are any who doubt the necessity for treating this condition at all, as I believe there are a few, let me remind them that a woman with retroversion or prolapse sometimes suffers so acutely and constantly as to be really an object of pity. Not only is the circulation of the uterus interfered with by the kinking of the vessels in the broad ligaments and by the pressure of the fundus on the uterine veins, but also the blad-

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der is constantly irritated by the pressure of the cervix on its neck, and the bowel by the pressure of the heavy fundus upon it, which is in many cases sufficient to completely obstruct all passage through the rectum. The patient constantly experiences a feeling of tenesmus or bearing down, the obstruction manifesting itself even when the feces are in a liquid state. But the worst symptoms, perhaps, are the reflex ones caused by the pressure of the uterus on the branches of the great sympathetic nerve, leading to distention and sluggishness of the bowels, dyspepsia, palpitation of the heart, disorders of vision, and headaches.

Of all the operations which I have ever performed for any condition the one which has afforded the greatest satisfaction is ventrofixation of the uterus. This satisfaction comes from three distinct sources: First, from its effectiveness in accomplishing the object desired; second, in accomplishing it with the smallest possible risk to the patient; and, third, in effecting it with the greatest possible ease to the operator. I shall now consider each of these points in detail:

First. Its efficiency. When a woman consults us for retroversion of the uterus, or prolapse, or even for procidentia or falling of the womb, in which the organ projects more or less from the vulva, we may treat her in several different ways. We may urge her to wear a tight T or perineal bandage, which is, of course, the poorest kind of a makeshift, and one which few women would be satisfied with. We have other means of keeping the womb up, such as supporting it by means of cotton or woollen pads, which are, however, very unsatisfactory, for the reason that the vulva is in many cases large and relaxed. The tampons will remain for a short time, but drop out either while walking or at the next effort at defecation. The tampons when reinforced by the perineal pad, even if they were effective, would still have the great objection that they necessitate the spending of much of the unhappy woman's time in journeying to and fro to the dispensary or consulting-

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room. This method never cures, and the patient sooner or later becomes tired of it, and abandons it altogether. The next best treatment is the use of the pessary, but this has been abandoned by most specialists, although adopted still by some general practitioners. The pessary has many objections: first of all, if the ovaries and tubes are inflamed and bound down by adhesions the pessary cannot be borne, and, as a rule, the patient returns in a few hours or in a few days, stating that she cannot bear the pain of it, and she sometimes, with good reason, blames us for making her worse.

Second. Even if there were no inflammation or adhesions, and the organ were freely movable, the vaginal outlet, as a rule, is too large to prevent the pessary from coming out, or if not already so the pressure exercised by the pessary will distend it until it drops out, when a larger and larger one must be introduced. Even when the vulva is small, as in virgins, and the pessary can be borne by the patient, she must come at regular intervals to the practitioner's office to have it cleansed and reintroduced. It is more or less a constant source of irritation; and it is apt to cause leucorrhœa, while in many cases I have seen the discharge become purulent, in which case the pessary becomes incrusted with phosphatic deposit, rendering it still more irritating. Cases are on record in which the pessary when not regularly attended to has ulcerated through the vaginal wall until malignant disease has been set up, and in other cases it has worked its way clear through the vagina into the abdominal cavity, whence it has been removed by abdominal section.

Third. The pessary interferes more or less with intercourse, while most women feel uncomfortable at the very idea of having an instrument inside of them, and are glad to dispense with it as soon as possible. To give the pessary its due, however, we must admit that a few cases of retroversion and prolapse are cured after three months' to a year's use of it. It is most useful in temporary cases, such as when the womb

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falls, because it has become pregnant and heavy; in such cases the pessary is useful to hold it up until the end of the third month, after which by its size the uterus will be prevented from falling backward or descending. One of the objections to the pessary can be remedied by diminishing the size of the vaginal outlet, by performing anterior and posterior colporrhaphy, or, in other words, sewing up the lacerated perineum, and reducing the area of the anterior vaginal wall by means of Stoltz's operation. Some have thought to cure the prolapse by this operation alone, but nearly all operators agree, especially Martin, of Berlin, that no matter how much the vagina may be narrowed, even to the extent of closing it up altogether, as by Le Forts' operation, which, of course, is only applicable to old women, the uterus will still come down and protrude from the vulva. At the same time by dilating, curetting, and repairing a lacerated cervix, or amputating it if there is much cystic disease, the weight of the organ is reduced so much that the weak and relaxed ligaments are then able to hold it up, but more often it drops again in spite of everything.

When these measures fail to cure we must resort to one of the various operations which are certainly far more effective. I shall mention them in the order of their gravity: First, removal of the uterus by the abdomen or by the vagina; second, Alexander's operation; and, third, ventrofixation. Although the removal of the retroverted or prolapsed uterus by the vagina is a much safer operation than when it is performed for cancer or fibroids, owing to the facility with which it may be brought down and all bleeding points seen and secured, and also to the greater certainty of securing asepsis, yet we are hardly justified in resorting to it or to any operation when the danger is so much greater than is incurred by the simple fastening of the uterus to the abdominal wall. When the appendages are diseased and the uterus is firmly attached with them to the sacrum or rectum, I have no hesitancy in saying that the abdominal route is much preferable

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to the vaginal one. Even its authors, Ségond, Richelot, and others, admit that they are frequently obliged to leave portions of the abscess wall or appendage. But is it certain that the removal of the uterus and appendages will always cure prolapse of the pelvic contents? True, the uterus when removed can no longer prolapse, but the uterus is not the only organ there; even after its removal the woman may have prolapse of the pelvic floor unless care be taken to sew the broad ligaments together, which is seldom done, although I make a practice of doing it when I remove the entire uterus. With ventrofixation not only is the entire uterus preserved and held up, but the bladder, vagina, and small intestines are also supported. When we compare ventrofixation with Alexander's operation with regard to efficiency, ventrofixation has one great advantage—Alexander's operation is a complete failure in all cases in which the uterus, or even the ovaries and tubes are adherent. True, Alexander's operation was not intended for such cases, and no one would knowingly do it when the uterus is fixed. But sometimes the uterus appears movable, and yet the mobility is very limited, and when we attempt to draw the fundus up to the abdominal walls by means of the round ligaments the latter will break rather than the adhesions. These adhesions which anchor the uterus explain the failure of some of the Alexander operations. When there are no adhesions I have found Alexander's operation very effective in holding up the uterus. I have never had hernia follow it, and I have known of only one failure out of twenty-one cases.

One objection to Alexander's operation is that the round muscles when they have not contracted for a long time become fatty and break when pulled upon. There is another objection to Alexander's operation which does not apply to ventrofixation, and that is the pain and numbness of the groin and labium due to the severing of the nerve running along the round ligaments. Quite a number of my patients have complained of this.

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Now if we look at the two operations of ventrofixation and shortening of the round ligaments from the standpoint of the risk to the patient, one might think at first sight that in this one respect at least there must be a vast difference in favor of Alexander's operation. But this is not the case. If there are no adhesions, and the ovaries and tubes are not attached, the mere operation of opening the abdomen and fixation of the uterus, under the rigorous aseptic precaution which we now employ, is absolutely devoid of danger; while if there are adhesions it is ever so much safer to detach them with the fingers in the abdomen than to replace the uterus with the sound. At least one case of death from this procedure has come to my knowledge, so that Alexander's operation is not entirely devoid of risk, if not to the patient's life, at least to her comfort. A number of cases are known to me in which single or double inguinal hernia has followed; this, of course, should never happen, but the fact remains that it has happened. A great many cases have been followed by suppuration, this having occurred in two of my own cases, while in a case under the care of a colleague the suppuration spread down between the folds of the broad ligaments, causing a true pelvic abscess. A few cases of death have been recorded as having followed Alexander's operation; but it is only fair to say that since writing this paper I have heard in Baltimore of a case of death following ventrofixation due to bleeding from the needle-hole in the uterus; but I cannot understand how that accident could have occurred. It must be distinctly understood that when ventrofixation is performed for the removal of pus-tubes or tearing away of adherent ovaries, it then assumes the mortality of the latter operation, which is greater or less according to the individual operator. When we compare the operations, from the point of view of the ease with which they can be performed, Alexander's operation is not in the discussion; it is *hors de combat*. I was so fortunate at first in quickly finding the round ligament, and drawing it out,

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that I could hardly believe that any skilled operator could have any difficulty in doing so; but after meeting two or three cases in succession in which the ligament broke on the slightest traction, I was compelled to open the abdomen and complete the Alexander operation by doing ventrofixation. I have also spent as much as one hour in finding the two ligaments, and I have seen other operators spend more time than that and yet fail to get the uterus up, the incision being closed without curing the displacement. I have indeed heard one quite well-known surgeon say that he had tried it for the last time, after searching for the ligament for one and one-half hours in vain. If the uterus were always free when it appears so, and the round muscles always healthy, red, fleshy, and fairly strong, there would be no difficulty in finding them and drawing them out; but, as a rule, in retrodisplacement and prolapse the round muscles have not contracted for weeks, months, and years. The inevitable result is, of course, fatty degeneration. The procedure which I have found most satisfactory has been, when the case requires it, to perform at a single sitting of a little over an hour, first, rapid dilatation; second, curetting, with the application of pure carbolic acid to every part of the endometrium; third, repair of the lacerated cervix; fourth, closure or narrowing of the anterior and posterior vaginal walls; fifth, opening the abdomen and liberating the uterus from its adhesions, and at the same time removing the appendages or as much of them as are diseased; and, sixth, fastening the uterus to the abdominal wall. My results in such cases, as I stated at the outset, have been most gratifying. The objection is sometimes made that the uterus is a movable organ, and should not be fixed in an immovable position. While this may be admitted, I am in a position to state that ventrofixation does not put the uterus in an immovable position, for, in one case in which a ventral hernia a year later necessitated my opening an abdomen, I had an opportunity of seeing that the uterus was hanging by a cord as thick as a

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lead-pencil, extending from the place where I had fastened it behind the pubes to the anterior surface of the uterus. In many other cases, on examining the patient in the Sims position, I could see the normal amount of to-and-fro movement of the organ taking place. For this reason Dr. Howard Kelly, to whom we owe so much for introducing this operation, now proposes to change its name to "suspensio uteri;" but as I do fix one end of it, leaving the rest of it movable, I prefer the name ventrofixation. Just a few words now as to the method of operating. After the usual precautions the patient is to be placed in the Trendelenburg posture, and a very small opening is made in the abdomen, about one and one-half inches being sufficient to admit two fingers, with which the uterus is lifted up, adhesions torn away if there are any, and the ovaries and tubes examined. While held up by the fingers, the fundus is caught by the bullet forceps just in the centre and held in the incision, when a space of a square inch is scarified with a point of the scalpel. It is then depressed for a moment, while the corresponding surface of the abdominal peritoneum is treated in the same manner, thus insuring broad and strong adhering surfaces. It is then drawn up again and two sterilized silk ligatures are passed through the fascia, then through the anterior wall of the uterus, and then through the fascia of the opposite side, tied, and cut short. These remain permanently.

In two cases I used silkworm-gut for this purpose; but this caused trouble, and I abandoned it; in more than half the cases I did not leave any permanent ligatures, and it was in one of these that the failure occurred. The abdominal wall is then closed in the manner which best suits the operator, my preference being given to the through-and-through silkworm-gut sutures, which I invariably leave in one month, by which time the exudation tissue has formed and has become thoroughly organized and strong. As for vaginal fixation or fixation to the bladder, I fail to see the sense of it, because the vagina and bladder themselves are in most cases just as badly prolapsed as the uterus.

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# THE ALEXANDER OPERATION.

By Clement Cleveland, M.D.,
*New York.*

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It may reasonably be assumed that the operation of shortening the round ligaments for the cure of retrodisplacement of the uterus has established its position as a scientific procedure. I am well aware that it is not universally accepted, that there are some of the most eminent gynecologists who still regard it with doubt, or are opposed to it altogether. Profound belief in it as the most potent means for the cure of a troublesome malady must be my excuse for venturing to present to this Society the results of my experience. I consider it one of the most beneficent operations ever devised.

I purposely say nothing in this paper on the history of the operation. That has been sufficiently treated. And I also omit, for the same reason, a description of the ligaments.

Arguments in Opposition to the Operation. The literature upon this subject is now quite extensive. I have read many able articles by men whose experience and standing entitle them to respectful hearing and consideration, and they are, with hardly an exception, unqualifiedly and enthusiastically in favor of the operation.

In listening to discussions upon the subject, one is struck with the not remarkable fact that those who have arrayed themselves in opposition were those who, confessedly, had never done the operation, and based their reasoning entirely

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upon theoretical grounds, or were those whose experience had been confined to a very few cases, and whose results had not been good.

The Alexander operation is by no means an easy one for the beginner. If the matter could be thoroughly investigated it would be found that the bad results had come from what may be called "first efforts." For myself I can say that I did not feel perfectly at home with the operation until I had done it a number of times—fifteen or more—and that now, with an experience quite large, I never begin an operation without some concern that I may not find the ligaments.

Those who are opposed to this operation have used arguments the most of which appear illogical and untenable. We hear it said that the operation is a dangerous one. It is necessary only to point to the large number of cases reported without a death to refute such a statement. In rare instances, making the percentage very small, death has occurred. There is no operation, no matter how trivial, that does not have some elements of danger about it. I class it in the same category as the operation upon the cervix, and consider it no more dangerous.

It is also said that there is too great difficulty in finding the ligaments, that they are sometimes absent, or so small and fragile that they easily break, or will not hold the uterus. It certainly requires great patience and care sometimes in discovering and drawing out these ligaments, but men who have gained sufficient experience to do the operation will never complain of this difficulty, nor do they assent to the claim that these ligaments are ever absent. Where there is a uterus there must be two round ligaments, and when they are not found in some portion of the inguinal canal the fault lies with the operator. They may be very small, they may be torn away in some of their fibres from the various attachments, but there are always some of these fibres left, which can be found by careful searching. They may be

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delicate and fragile, but one who knows how to handle them rarely breaks them, and no matter how small they may be, in most cases they have strength enough to support the uterus to which they are attached.

It has been claimed that this operation causes abortion. I have never heard or read of a case in which it was asserted that the restoring of the uterus to the normal position by shortening the round ligaments had caused abortion. It is difficult to see how such an event could possibly be due to this operation. It has also been claimed, and surgeons are always questioned upon this point, that after labor the uterus will relapse into its former displaced position. Among my own cases are a number of patients who have gone to full term, and have been examined repeatedly afterward for the purpose of testing the validity of this claim. In no one instance has the uterus been found out of place. The same is found to be almost universally true in examining the statistics of other operators. I have cautioned my patients who have had the Alexander operation that it is unwise for them to become pregnant for at least a year from the time of operation. This, however, is merely for the sake of great caution. There are cases on record in which pregnancy has taken place within a short period after the operation, and yet the uterus remained in the anterior position after labor. One of my patients found herself in this condition five months after the operation, and, remembering my instruction, had an abortion produced; but this was not with my sanction. I would not venture to advise such interference, as there are instances in which women have had children within a year after the operation, and still the uterus remained in place. It is wise in all cases within a few weeks after confinement, and especially in those who have had the round ligaments shortened, to make a vaginal examination, to ascertain the position of the uterus, and, if it is retroplaced, to replace it, and to support by a pessary. It has been my own habit for many years to examine all patients a few weeks after labor

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before allowing them to go about, to learn the condition of the cervix and the position of the uterus. If the uterus is found retroverted, a pessary is inserted, which they wear for at least a couple of months, when it can be tolerated. It is here, as a preventive measure, that the use of the pessary is most clearly indicated, as childbearing is a most fertile cause of retrodisplacement. It keeps a heavy uterus out of the pelvis and takes the strain from the ligaments during the process of involution, and thereby helps them to regain their normal condition.

The claim is also made that invalidism is likely to follow this operation. On the contrary, the testimony of most operators is to the effect that it restores the invalid to a condition of sound health. Of course, isolated cases will be met with in which the operation has not improved the condition of the patient or has even made her worse. I believe it to be probable that if such cases were investigated, it would be found, nine times out of ten, that most of them were improperly selected, that the indications for the operation had not been clearly defined. The frequency of hernia as a result is held up as a serious objection to the operation. In all my cases I have had but two where hernia followed, and they were among my earliest cases where the canal was slit up and buried sutures were used, followed by suppuration. In not one case in which the canal was not slit up has hernia appeared.

It is said, too, that it is limited in its application. It certainly is, and should be.

Another assertion is that it is an unscientific procedure. By this must be meant either that it is unscientific to shorten a ligament that has been abnormally lengthened, or that when this is done the uterus is placed in an abnormal position. In the first place, what sound objection can there be to restoring a ligament to the length which it had originally, and thereby restoring its function, unless by so doing you do a permanent injury to other structures? In the second place,

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with proper judgment and care, there is no danger in drawing the uterus too tight against the abdominal wall—no danger, in properly selected cases, of anteflexing the uterus. If the operation is properly done, the uterus is placed in an anatomically correct position, and this is true theoretically and physiologically also.

At the discussion on this subject, at last year's meeting, a distinguished Fellow of the Society, for whom I entertain sentiments of great respect for his ability and learning, declared the Alexander operation to be "a passing fad of the day," and that it would soon become obsolete. The rapidly increasing number of surgeons who are doing the operation, and reporting their successes, with enthusiastic testimony to its benefits, is answer enough to such a statement.

It is further claimed that there are other and preferable methods. By this, of course, is meant ventrofixation of the uterus, intraperitoneal shortening of the ligaments, and vaginal fixation, anterior and posterior. Formerly I was opposed to the Alexander operation, for what I deemed good and sufficient reasons, and contented myself with ventrofixation. This I have performed many times, and have been successful with it, and preferred it to all other methods. Since, however, I began to have such excellent results from shortening the round ligaments I have found it impossible to advocate an operation that must be classed under the heading of "capital"—that is, one in which there is a recognized danger to life. I know of no statistics in regard to the effect of pregnancy upon adhesions formed after ventrofixation. Theoretically, it would seem to be disastrous. It is known that the round ligaments grow in proportion with the pregnant uterus, and as they grow in size their strength is proportionally increased also, to support the increased weight of the uterus. This may possibly be true in regard to anterior adhesions, but it would hardly seem so.

With vaginal fixation I have had no experience, and can,



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therefore, offer no criticisms, save the general one, that the operations included under this heading have but few advocates.

In regard to intraperitoneal shortening of the ligaments I would place it in the same category as ventrofixation, and would be opposed to it partly for the same reasons. But more than that, I believe that there is another argument against it, and it is this: In very many cases the ligaments are found torn away from the pubic spine, frayed out, and a solid portion of the ligament is not reached until it has been drawn out an inch or more. This fact—the slight hold of the ligament at the pubic spine and in the canal—militates against the probability that such ligaments would hold the uterus after mere intraperitoneal shortening. Mann's operation for intraperitoneal shortening, where the ligament is secured on the internal ring, is the only possible one in which this objection does not hold good. I do not wish to be understood, however, as condemning any of these operations. I merely wish to show, if I can, why the Alexander should be preferred.

MODIFICATIONS OF THE OPERATION. It is not my purpose to discuss at any length the various modifications of this operation which necessitate opening the inguinal canal. They are all ingenious and do great credit to their originators, but I consider them entirely unnecessary, as the original Alexander operation appears to answer all the requirements, necessitates a shorter incision, is fraught with less danger to life, is less likely to be followed by hernia, and, moreover, because, in the hands of the expert, it can be as easily and as quickly performed, and the results are in every sense as satisfactory.

INDICATIONS FOR THE OPERATION. This operation is indicated in retro-displacement, with prolapse of one or both ovaries, when for any reason the patient cannot or is unwilling to wear a pessary; also when there is a shallow Douglas's pouch, for in such cases it is impossible to introduce a pessary that will hold the uterus in the anterior position, and also in procidentia, when this operation is to be associated

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with plastic operations upon the vagina and perineum. There is in my life one case of complete procidentia. Here the curetting, amputation of the cervix, anterior colporrhaphy, perineorrhaphy, and lastly the Alexander were done. This was three years ago. All were successful. The patient had been bed-ridden; she is now perfectly well.

CAUSES OF FAILURE. These are manifold. Chiefly among them should be mentioned bad surgery in first efforts. Of course if a man is to do the operation he must make a beginning, and if he gains his experience entirely upon the living subject, he must expect some bad results. The best plan, as in most operations, is to perform it first upon the cadaver, and I know of no operation in which such a course could be better followed. One of the chief causes of disappointment comes from its performance in improper cases, among which may be mentioned those in which plastic adhesions exist to a more or less extent, and the uterus has not been easily reduced to a position of normal anteversion, and those in which there is disease of one or both ovaries, or of the uterus itself; cases in which one or both ligaments have not been found, though cases are reported in which one ligament has been found to support the uterus fairly well; also where the ligaments have been broken during operation, or have been too delicate to hold the uterus; lastly, cases in which too many sutures have been introduced, or where they were introduced so tightly that they cut partly through the ligaments. It is rare, however, that the ligaments are too frail. Most ligaments are capable of sustaining the uterus to which they are attached. I have in mind a delicate woman in whom I performed the operation, and found two very slender ligaments. I remarked at the time that the operation would probably be a failure. Contrary to my expectation, however, these ligaments held the uterus in perfect position, and the patient, who had been confined to her bed most of the time for the previous two years, was soon able to be up and about, and attend to her house-

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hold duties. I have lately seen this patient, and found a uterus pregnant at three months, and in perfect position. In many of the cases herein reported the ligaments were found to be very small, yet their stability is manifest from the good results attained. There should, therefore, be no positive discouragement when the surgeon meets with small ligaments. Among the causes of failure should be placed insufficient drawing out of the ligaments, four inches being necessary in nearly every case. One cause of failure may be that an operator does not cut deep enough, but hunts for the ligament in the tissues external to the ring.

Suppuration in the wounds should be included among the causes of failure, though most cases have proved successful although that has occurred.

TECHNIQUE OF THE OPERATION. The patient is carefully prepared as for a cœliotomy. The vagina is rendered thoroughly aseptic. The uterus is always curetted, as the first step. If the cervix is torn, this is repaired after the curretting, and before the Alexander. A pessary is then introduced. If there is a tear of the cervix, and also of the perineum, the cervix is repaired first, a pessary introduced, the ligaments then shortened, and the perineum closed last. There is quite a long list of cases in which these three operations were all done at one sitting. When it can be tolerated a pessary is always used, even in those patients in whom both the cervix and perineum are closed, and this is worn from two months and a half to three months, for the reason that it requires two months for the several tissues to regain their normal strength and stability. The pessary may, of course, be removed and cleansed when necessary, after a period of six weeks, which is a long enough time to secure a perfectly strong perineum, and when the perineum has been closed in connection with this operation it is well not to disturb the pessary for that length of time.

TECHNIQUE. An incision three-quarters of an inch to an

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inch or more in length is made from the pubic spine in the direction of the inguinal canal, through integument and fat down to the fascia of the external oblique. It is rare that an incision longer than an inch is found necessary, even in the fattest subjects. With the tip of the index finger a point of less resistance just above the pubic spine is then sought for, and, in most instances, is readily found. This is the so-called "intercolumnar cellular membrane" covering the external ring. By separating the incision by the thumb and index finger, and pressing firmly on either side of the ring upon the pillars, this cellular membrane will be seen to pouch, and, upon cutting through, the proverbial bunch of fat will protrude. This bunch of fat contains the ligament itself or fibres of it. By grasping it with forceps and by gentle traction the ligament can readily be isolated, and should be separated from the nerve that accompanies it. It can then, by persistent coaxing, be drawn out of the canal to what is considered the proper length, which in most cases, as I have said, is about four inches. The incision is then covered with gauze wet with bichloride solution (1 to 3000), and the other ligament is then sought for and drawn out in the same manner. Two sutures are then introduced to include all the tissues with the ligament—that is, through the integument, fat, pillar of the ring and muscle, through the ligament, which is held quite taut by an assistant, then, in reverse order, through the same tissues on the other side of the ring. At this point I practice a modification of my own, which saves an inch or more of the ligament and, as it seems to me, secures a better prospect of success. A ligature-carrier (Fig. 2), made sharp and delicate for the purpose, is passed at the lower end of the incision under the fascia and out on the mons, at a point an inch or more, below the pubic spine (Fig. 1). The carrier is then opened a little, in order to make the canal sufficiently large for the passage of the ligament, and to stretch the fascia slightly. A loop of silkworm-gut, or other material, is then placed in the grasp of the carrier, and the instrument is drawn

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back with this loop into the incision (Fig. 1). A loop of the end of the ligament is then placed in the loop of silkworm-gut (Fig. 2), and the latter drawn back with the ligament through the small opening in the mons (Fig. 3). While an assistant holds the end of the ligament quite taut the sutures in the incision are then tied, and, lastly, the suture is passed through the integument and ligament at the point of exit of the latter on the mons, then tied, and the excess of ligament is cut away (Fig. 4). The same process is repeated on the other side. If the operation has taken a good deal of time, or there has been rough handling of the tissues and ligament, a few strands of silkworm-gut are placed under the ligaments in the canal, as drainage, as advised by Edebohls, to be removed in twenty-four hours. A dressing of gauze wet with a solution of 1 to 3000 bichloride is then placed over the wounds, with pads of sterilized gauze and cotton above it, all being secured by a double spica bandage, firmly applied. The patient is kept in bed for three weeks. Liquid food is given for the first few days, and after that, if no unpleasant symptoms have appeared, as generous a diet as is allowable to a patient kept in bed. The bowels are moved every other day.

RECAPITULATION. I make a very short incision, because I have found the work can be done quite as readily, and because a small scar is best for every reason. The patient herself would certainly prefer it could she have a choice in the matter, and there is, moreover, a decreased chance of infection.

In regard to suture material, I use silkworm-gut by preference, which is always sterilized with the instruments just before the operation. It is less absorbent than silk, and makes an ideal suture. I have given up the use of buried sutures of any material, because I have had trouble with them, and because my mind is never free from anxiety in regard to a case in which I have employed them. Moreover, my results have been satisfactory without them. I consider

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FIG. 1.

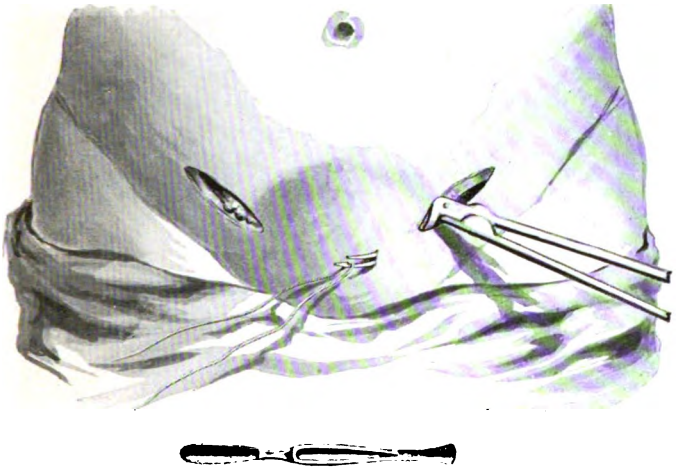
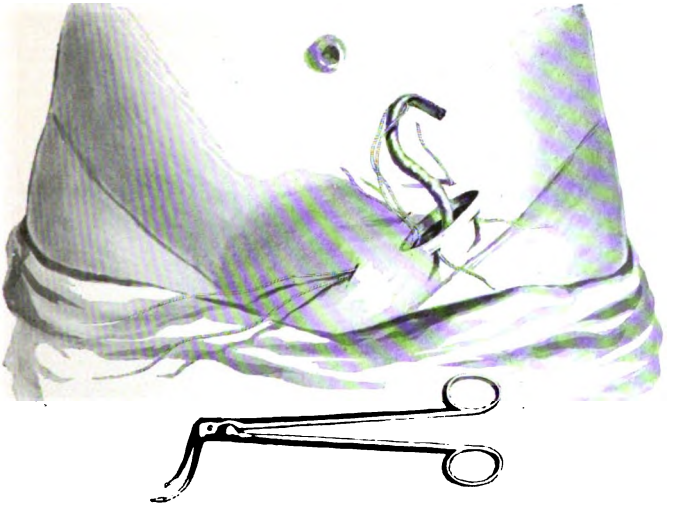


FIG. 2.



(From the Gynecological and Obstetrical Journal.
D. Appleton & Co., New York.)

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FIG. 3.

FIG. 4.

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them irritating and a fruitful source of pus in wounds. I use but two sutures in the incision, because many sutures, introduced close together, are apt to produce sloughing, and because two support the ligament sufficiently and there is more space for drainage. I leave the sutures in place three weeks, to give the ligaments a better chance to become firmly adherent.

In cases of retroflexion the operator should see that the fundus is lifted out of the pelvis, either with the sound or with a pessary, from the fact that a uterus left in retroflexion is likely to be still further retroflexed by drawing upon the ligaments.

An interesting fact appears in the study of ligaments exposed in operating—that those which are torn or frayed occur in patients who have not borne children, and where the displacement can be traced to a fall or some severe physical shock, while those that are found of well-rounded shape in the inguinal canal occur chiefly in women whose displacements are due to child-bearing.

Some cases with posterior adhesions may become operable after treatment, or the posterior incision may be made, adhesions broken up, as suggested by Polk, and then an Alexander done. In one of my cases, in which death occurred from peritonitis, I opened the abdomen, broke up adhesions, and then did the Alexander. It was among my earliest cases. I would never open the abdomen again, but would always enter by Douglas's pouch.

The dressings over the wounds are changed every four days, and a saturated solution of boric acid is later used, instead of the bichloride, for the reason that bichloride when frequently applied irritates the skin. With this care in the dressings, pus has rarely appeared in my cases. Every patient should be cautioned not to pass her hands underneath the bandage or dressings; this has been found to be a source of sepsis in the wounds. Patients will do this from curiosity or to relieve irritation of the skin.

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I should mention that during the operation the wound is frequently bathed with a 1 : 3000 solution of bichloride of mercury.

The most careful attention is paid to the bladder and bowels. The patients are all encouraged to pass their urine every six hours, plenty of cotton being placed so as to protect the dressings. When urination is impossible a catheter is passed, the greatest care being taken to see that the meatus and vestibule are aseptic before its introduction. It is necessary to be thus careful about the urination, because a distended bladder might prove disastrous to the holding of the ligaments, and without strict attention to sepsis the bladder may easily be infected.

When I began to use the modification of the method above mentioned I employed a curved Hagedorn needle with a carrying thread attached, for the purpose of carrying the ligament underneath the tissues of the mons, but I found that in drawing the ligament through, it was often caught and torn as it passed through the fascia. I therefore substituted the use of the ligature-carrier in the way above described, in order to stretch the fascia sufficiently for the ready passage of the ligament.

I would repeat that a pessary is worn, in all cases, from two and a half to three months, and that after its removal the patient is instructed to report for examination once a month for a period of six months, where this is possible. After the Alexander operation the pessary can, in most cases, be tolerated. If at any time sagging of the uterus is discovered, the pessary is again introduced and worn for a longer period.

I would add that I have never had a ligament slough in the artificial canal made for it under the mons.

In regard to the modification here described, it is claimed for it merely that it seems to offer a better chance for the stability of the ligaments, inasmuch as it gives an inch or more of anchorage, and the end of the ligament is distrib-

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uted in the same direction in which the termini of the normal ligament are lost in the tissues of the mons. I cannot say, however, that in the last fifty or more cases in which I have used it I have had any better results than with the unmodified Alexander method. I merely offer it for what it is worth.

Two small, very sharp scalpels, made after the pattern shown in Fig. 2, with rounded ends, I have found most useful. The rounded, sharpened point enables the operator to cut perpendicularly in a small incision through the intercolumnar cellular membrane. I am careful to have the knives made very sharp before each operation, as there is nothing so aggravating as a dull knife.

Appended is a tabulated list of eighty-three cases from my service in the Woman's Hospital, in New York, some of the operations having been performed by my assistants, Drs. Kletzsch and Broun.

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## TABLE OF ALEXANDER OPERATIONS.

| No. | Patient. | Indication for operation. | Other operations. | Date of operation. | When last seen. | Anatomical result at last examination. | Therapeutic result when last seen. | Method of operation and remarks. |
|---|---|---|---|---|---|---|---|---|
| 1 | Mrs. E. T. | Retroversion. | ..... | April, 1892 | Not since she left the hosp. | Uterus in position. | ..... | Buried sutures, silkworm-gut. |
| 2 | Mrs. A. B. | Retroversion. | ..... ..... | April, 1892 | Not since she left the hosp. | Uterus in position. | ..... | Buried sutures, silkworm-gut. |
| 3 | Miss C. McC. | Retroversion, left ovary prolapsed. | ..... | May, 1892 | June 15, 1892 | Position perfect. | ..... | Buried sutures, silkworm-gut. |
| 4 | Miss H. H. | Lacerated cervix, retroflexion. | Trachelorrhaphy. | June, 1892 | Not since she left the hosp. | Uterus backward one year afterward. | ..... | Buried sutures, followed by suppuration and hernia. |
| 5 | Mrs. B. A. | Lacerated cervix and perineum, retroversion. | Repair of cervix and perineum. | June, 1892 | April 26, 1895 | Uterus in excellent position. | Relieved of all symptoms. | Buried sutures. |
| 6 | Mrs. F. K. | Lacerated cervix and perineum, retroversion. | Repair of cervix and perineum. | Oct. 1892 | Dec, 1, 1892 | Partially backward, pessary. | ..... | Right ligament anchored; left found, but could not be withdrawn. |
| 7 | Miss L. K. | Retroversion. | ..... | Oct. 1892 | April, 1895 | Position excellent. | Relieved of all symptoms. | No buried sutures. |
| 8 | Mrs. K. I. | Retroversion, left ovary prolapsed. | ..... | Oct. 1892 | Not since she left the hosp. | Position excellent. | Relieved of symptoms. | |
| 9 | Mrs. I. N. | Lacerated cervix and retroversion. | Repair of cervix. | Nov. 1892 | Not since she left the hosp. | Excellent. | Relieved of symptoms. | |
| 10 | Miss T. K. | Retroversion, both ovaries prolapsed. | ..... | Nov. 1892 | April, 1895 | ..... | ..... | Since married, and when seen was six months pregnant. |
| 11 | Miss L. E. | Retroversion. | ..... | Dec. 1892 | April, 1895 | Result excellent. | Relieved of all symptoms. | Ligaments secured in wound; no buried sutures |
| 12 | Mrs. E. M. | Retroversion. | ..... | Jan. 1893 | Not since she left the hosp. | Excellent. | Relieved. | Both wounds suppurated. |
| 13 | Mrs. D. H. | Lacerated cervix, retroversion. | Repair of cervix. | Feb. 1893 | April, 1893 | Excellent. | In perfect health. | Confined March 1, 1895, of a living child; occiput posterior; version. |

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|---|---|---|---|---|---|---|---|---|
| 14 | Mrs. I. J. | Retroversion, left ovary prolapsed. | ..... | March, 1893 | May 21, 1893 | ..... | ..... | Ligaments used as a living suture, after Abbé, with which external ring was closed; much suppuration and exudation followed, which cleared up. |
| 15 | Mrs. K. | Retroversion. | ..... | March, 1893 | April, 1895 | Excellent. | Perfect health. | Was delivered in summer of 1894 of a living child; normal labor. |
| 16 | Mrs. H. | Retroversion. | ..... | March, 1893 | May, 1895 | Excellent. | Perfect health. | |
| 17 | Mrs. C. C. B. | Retroversion. | ..... | March, 1893 | May, 1895 | Excellent. | Perfect health. | |
| 18 | Mrs. H. C. | Retroversion. | ..... | March, 1893 | April, 1895 | Excellent. | Perfect health. | |
| 19 | Mrs. C. A. | Lacerated cervix and perineum, complete procidentia. | Repair of cervix and perineum. | March, 1893 | April, 1895 (letter). | Perfect. | Excellent health. | |
| 20 | Mrs. F. T. | Retroversion. | ..... | May, 1893 | ..... | Excellent. | Says she is perfectly well. | |
| 21 | Mrs. A. B. | Retroversion. | ..... | May, 1893 | Nov. 1894 | Uterus in position; 2 months pregnant. | Relieved of symptoms. | Seen until 8 months pregnant, then lost sight of. |
| 22 | Mrs. L. B. | Lacerated cervix and perineum, retroversion. | Repair of cervix and perineum. | June, 1893 | Dec. 1894 (about). | Excellent position. | Relieved of symptoms. | Delivered of a healthy child, Sept. 22, 1894; uterus in position when seen afterward. |
| 23 | Mrs. G. T. | Retroversion. | ..... | June, 1893 | April, 1895 (letter). | ..... | In excellent health, and relieved of all symptoms after operation. | |
| 24 | Mrs. A. N. | Lacerated cervix and perineum, retroversion. | Repair of cervix and perineum. | June, 1893 | ..... | In excellent position when discharged from hospital. | | |
| 25 | Mrs. A. W. | Lacerated cervix and perineum, retroversion. | Repair of cervix and perineum. | June, 1893 | Not seen since leaving hosp. | Uterus in position when discharged from hospital. | | |
| 26 | Miss S. L. | Retroversion. | ..... | July, 1893 | Nov. 1893 | Uterus backward. | Symptoms relieved. | |
| 27 | Mrs. L. A. | Lacerated cervix and perineum, retroversion. | ..... | Aug. 1893 | Not seen since leaving hosp. | Uterus in position when discharged from hospital. | | |
| 28 | Mrs. M. B. | Lacerated cervix and perineum, retroversion. | Repair of cervix and perineum. | Oct. 1893 | Not seen since leaving hosp. | Excellent on leaving hospital. | | |

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| No. | Patient. | Indication for operation. | Other operations. | Date of operation. | When last seen. | Anatomical result at last examination. | Therapeutic result when last seen. | Method of operation and remarks. |
|---|---|---|---|---|---|---|---|---|
| 29 | Mrs. K. | Retroversion. | ..... | Oct. 1893 | Not seen since leaving hosp. | Excellent on leaving hospital. | | |
| 30 | Mrs. I. | Retroversion. | ..... | Oct. 1893 | Heard from indirectly 1895 | Excellent on leaving hospital. | Excellent health. | |
| 31 | Mrs. K. | Lacerated cervix and perineum, retroversion. | Cervix and perineum repaired. | Oct. 1893 | ..... | Uterus backward, as reported by Dr. Boldt in April, 1895. | | |
| 32 | Mrs. K. | Retroversion. | ..... | Nov. 1893 | ..... | Excellent on leaving hospital. | | |
| 33 | Miss K. R. | Retroversion. | ..... | Dec. 1893 | ..... | Good on leaving hospital. | | |
| 34 | Mrs. G. | Retroversion. | ..... | Jan. 1894 | April 26, 1895 | Position excellent. | Relieved of all symptoms. | |
| 35 | Miss D. | Retroversion. | ..... | Jan. 1894 | ..... | Excellent on leaving hospital. | | |
| 36 | Mrs. L. | Retroversion. | ..... | Jan. 1894 | ..... | Excellent on leaving hospital. | | |
| 37 | Mrs. F. | Lacerated cervix and perineum, retroversion. | Cervix and perineum repaired. | Jan. 1894 | June 7, 1895 | Position excellent. | Symptoms relieved. | |
| 38 | Mrs. H. | Lacerated cervix, etc. | Cervix and perineum repaired. | Feb. 1894 | ..... | Good on leaving hospital. | | |
| 39 | Mrs. C. | Lacerated cervix, etc. | Cervix and perineum repaired. | Feb. 1894 | ..... | Good on leaving hospital. | | |
| 40 | Mrs. F. | Lacerated cervix, etc. | Cervix and perineum repaired. | Feb. 1894 | ..... | Good on leaving hospital. | | |
| 41 | Mrs. J. H. D. | Retroversion. | ..... | March, 1894 | ..... | Good on leaving hospital. | | |
| 42 | Mrs. A. F. | Retroversion. | ..... | April, 1894 | ..... | Good on leaving hospital. | | |
| 43 | Mrs. H. R. | Retroversion. | ..... | April, 1894 | May. 1895 | Uterus in excellent position. | Symptoms relieved. | |
| 44 | Mrs. M. S. | Retroversion. | ..... | April, 1894 | ..... | Excellent on leaving hospital. | | |

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|---|---|---|---|---|---|---|---|---|
| 45 | Mrs. S. B. | Lacerated cervix and perineum, retroversion. | Repair of cervix and perineum. | April, 1894 | Apr. 1895 (letter). | ..... | Symptoms all relieved. | |
| 46 | Mrs. N. T. B. | Retroversion. | ..... | May, 1894 | Not seen since leaving hosp. | Excellent when last seen. | | |
| 47 | Mrs. E. J. | Lacerated cervix and perineum, retroversion. | Repair of cervix and perineum. | May, 1894 | ..... | Uterus backward. | | |
| 48 | Mrs. M. B. | Lacerated cervix and retroversion. | Repair of cervix. | May, 1894 | April 25, 1895 | Uterus in excellent position. | Pregnant. | |
| 49 | Mrs. A. T. | Lacerated cervix and retroversion. | ..... | June, 1894 | ..... | Good when last seen. | | |
| 50 | Mrs. A. S. | Retroversion. | ..... | July, 1894 | ..... | Good when last seen. | | |
| 51 | Mrs. S. | Retroversion, lacerated cervix and perineum. | Repair of cervix and perineum. | July, 1894 | Apr. 1895 | Uterus in excellent position. | Some backache still present, owing to need of a firmer perineum. | |
| 52 | Mrs. N. | Lacerated cervix and perineum, retroversion. | Repair of cervix and perineum. | July, 1894 | Nov. 1895 (about). | Position excellent. | Symptoms relieved. | |
| 53 | Mrs. C. B. | Lacerated cervix etc. | Repair of cervix and perineum. | July, 1894 | ..... | On leaving hospital position excellent. | | |
| 54 | Mrs. R. W. | Lacerated cervix etc. | Repair of cervix and perineum. | July, 1894 | ..... | When last seen excellent. | | |
| 55 | Mrs. D. | Retroversion. | ..... | Aug. 1894 | Jan. 1895 | Position excellent. | Symptoms relieved. | |
| 56 | Mrs. B. | Lacerated perineum and retroversion. | Repair of perineum. | Sept. 1894 | Feb. 1895 | Position excellent. | Symptoms relieved. | |
| 57 | Mrs. T. | Lacerated cervix and perineum, retroversion. | Repair of cervix and perineum. | Sept. 1894 | Feb. 1895 | Position excellent. | Symptoms relieved. | |
| 58 | Mrs. C. | Retroversion, adhesions. | Cœliotomy and removal of diseased appendages. | Sept. 1894 | Feb. 1895 | Position excellent. | In perfect health. | |
| 59 | Mrs. H. C. | Retroversion, dense adhesions, with diseased tubes. | Cœliotomy, removal of appendages. | Sept. 1894 | Jan. 1895 | Uterus in position. | No relief. | Uterus evidently seat of disease, and ought to have been removed. |
| 60 | Mrs. S. | Retroversion. | ..... | Oct. 1894 | Apr. 1895 | Excellent position. | Symptoms relieved. | |
| 61 | Mrs. S. | Retroversion. | ..... | Oct. 1894 | Apr. 1895 | Excellent position. | Symptoms relieved. | |

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| No. | Patient. | Indication for operation. | Other operations. | Date of operation. | When last seen. | Anatomical result at last examination. | Therapeutic result when last seen. | Method of operation and remarks. |
|---|---|---|---|---|---|---|---|---|
| 62 | Mrs. K. | Lacerated cervix and perineum, retroversion. | Repair of cervix and perineum. | Oct. 1894 | Feb. 1895 | Excellent position. | Symptoms relieved. | |
| 63 | Mrs. E. | Lacerated cervix etc. | Repair of cervix and perineum. | Oct. 1894 | Apr. 1895 | Excellent position. | Symptoms relieved. | |
| 64 | Miss H. | Procidentia. | Amputation of cervix. | Jan. 1895 | Apr. 1895 | Excellent position. | Symptoms relieved. | |
| 65 | Miss F. | Retroversion. | ..... | Jan. 1895 | ..... | Excellent position on leaving hospital. | Symptoms relieved. | |
| 66 | Miss H. | Retroversion. | ..... | Jan. 1895 | Apr. 1895 | Uterus in excellent position. | Symptoms relieved. | |
| 67 | Mrs. S. | Retroversion. | ..... | Feb. 1895 | Apr. 1895 | Excellent. | Symptoms relieved. | |
| 68 | Mrs. P. | Retroversion, lacerated cervix and perineum. | Cervix and perineum repaired. | Feb. 1895 | ..... | Still in hospital. | Symptoms relieved. | |
| 69 | Mrs. H. | Lacerated cervix and perineum, retroversion. | Cervix and perineum repaired. | March, 1895 | May, 1895 | Excellent position. | Health splendid. | Detained in hospital on account of other operations. |
| 70 | Mrs. B. W. | Retroversion, adherent. | Cœliotomy, Alexander. | Mar. 11, 1895 | ..... | On leaving hospital, position excellent. | Relieved of symptoms. | |
| 71 | Mrs. C. | Lacerated cervix and perineum, retroversion. | Amputation of cervix, Alexander; perineorrhaphy. | Mar. 18, 1895 | ..... | On leaving hospital, position excellent. | Relieved of symptoms. | |
| 72 | Mrs. C. | Lacerated perineum through sphincter, retroversion. | Perineorrhaphy, Alexander. | Mar. 25, 1895 | ..... | On leaving hospital, position excellent. | Relieved of symptoms. | |
| 73 | Mrs. P. | Lacerated cervix and perineum, retroversion. | Amputation of cervix, Alexander; perineorrhaphy. | Mar. 25, 1895 | ..... | On leaving hospital, position excellent. | Relieved of symptoms. | |
| 74 | Miss G. | Retroflexion. | Alexander. | Apr. 1, 1895 | ..... | On leaving hospital, position excellent. | Relieved of symptoms. | |
| 75 | Mrs. C. | Retroversion and cystocele. | Alexander, anterior colporrhaphy, perineorrhaphy. | Apr. 5, 1895 | ..... | On leaving hospital, position excellent. | Relieved of symptoms. | |

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|---|---|---|---|---|---|---|---|
| 76 | Miss B. G. | Retroversion and cophlritis, cystocele. | Laparotomy, oophorectomy, Alexander. | Apr. 5, 1895 | ..... | On leaving hospital, position excellent. | Relieved of symptoms. |
| 77 | Mrs. R. | Lacerated cervix and perineum, retroversion. | Amputation of cervix, Alexander; perineorrhaphy. | Apr. 8, 1895 | ..... | On leaving hospital, position excellent. | Relieved of symptoms. |
| 78 | Mrs. D. | Retroversion and lacerated cervix and perineum. | Dilatation and curettage, amputation of cervix, Alexander; perineorrhaphy. | Apr. 22, 1895 | ..... | On leaving hospital, position excellent. | Relieved of symptoms. |
| 79 | Miss B. | Retroversion and endometritis. | Dilatation and curettage, Alexander. | Apr. 26, 1895 | ..... | On leaving hospital, position excellent. | Relieved of symptoms. |
| 80 | Mrs. B. McL. | Retroversion and endometritis. | Dilatation and curettage, Alexander. | Apr. 26, 1895 | ..... | On leaving hospital, position excellent. | Relieved of symptoms. |
| 81 | Miss S. | Retroversion and endometritis. | Dilatation and curet. tage, Alexander. | May 13, 1895 | ..... | On leaving hospital, position excellent. | Relieved of symptoms. |
| 82 | Mrs. W. | Retroflexion, lacerated cervix and perineum. | Dilatation and curettage, amputation of cervix, Alexander; perineorrhaphy. | May 20, 1895 | ..... | On leaving hospital, position excellent. | Relieved of symptoms. |
| 83 | Mrs. Y. | Lacerated cervix, retroversion. | Dilatation and curettage, amputation of cervix; Alexander. | May 25, 1895 | ..... | On leaving hospital, position excellent. | Relieved of symptoms. |

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## DISCUSSION.

DR. FRANCIS H. DAVENPORT, of Boston.—It is evident from these papers that the question of the proper and best treatment for that minority of cases of backward displacement of the uterus for which the Alexander operation is recommended is still a matter of debate, and a subject regarding which there is considerable difference of opinion. I say "that minority of cases," because it seems to me that after the most advantageous showing which the advocates of this operation can make, the indications for the operation are still exceedingly limited. Dr. Cleveland, if he were to follow the indications laid down in his paper, would, I am sure, find the cases comparatively few which call for the Alexander operation. In the first place, it is indicated, he says, in the case of those who cannot or will not wear a pessary. It seems to me that if such cases are ruled out it leaves a comparatively small number which will call for the operation. Many cases of retroversion of the uterus which I have seen are, I am sure, temporary in their character, not as regards the displacement itself, but as regards the symptoms. I think that we all agree that there are a great many women who have retroflexed uteri which give rise to no symptoms for years, and then, from some physical or nervous strain, such uteri begin to cause them, and if the patients are seen at that time the adjustment of a pessary for a short period will so relieve the local symptoms as to give the general health a chance to recover itself, and the necessity for a pessary will be over. Either the uterus will remain in its normal position, or if it does retrovert it will not give rise to symptoms.

The cases of backward displacement with adhesions do not, of course, come into the discussion of the Alexander operation. I would differ most decidedly from Dr. Smith if in cases of simple retroversion without adhesions he would prefer ventral fixation. While the limitations of the Alexander operation are, to my mind, great, there is no question that there are cases to which it is applicable. At the same time, personally, I do not consider it an ideal operation. It seems to me that there are inherent

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objections to it which, although it is occasionally necessary to perform it, prevent it from being an ideal operation. In my experience it does not always relieve the symptoms, even though the uterus may be freely movable and may easily come up into position; and again, after the Alexander operation has been performed, the patients still complain of pelvic pains, still complain of the menstrual symptoms and the other discomforts which have led them to seek relief.

In the second place, I am of the opinion that it gives rise to hernia more often than is generally supposed. That is a strong argument against its employment. Numbness and pain in the incision and groin are, in my experience, not infrequent sequelæ. For all these reasons I would certainly limit the operation.

It seems to me that the pathological condition which is the cause of the retroversion or flexion is not the lax condition of the round ligaments, but has to do more with the relations of the cervix to the vaginal walls and also to the attachments of the broad and the utero-sacral ligaments. It may be because the trouble is there that in certain cases the Alexander operation has failed to give relief or the uterus has failed to remain in position. The round ligaments themselves are not strong enough to anchor the uterus forward when these other conditions relating to the vaginal walls and the lower parts of the broad ligaments are at fault. I am free to say, however, that as yet I have had no experience with any other operation which has been more satisfactory. It may be that the method proposed in Germany, of opening the anterior vaginal cul-de-sac and suturing the uterus forward to the anterior vaginal wall, will solve the problem of the treatment of these cases which at present, to my mind, are not satisfactorily explained or treated.

Dr. Ely van de Warker, of Syracuse.—Being somewhat in touch to-day with the prevailing surgical spirit, both here and abroad in the land, I feel that hysterectomy will probably be the only accepted method of the future for the treatment of retroflexion of the uterus, and I think that we older Fellows ought to have a chance to say something before it is too late. At the second meeting of this Society in Boston, and that is some twenty years ago, when I was a comparatively young man, I had the



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temerity to read a paper on the treatment of flexion of the uterus with the intra-uterine stem, and I presume in the whole history of this Society there has never been an instance of a young man or an old one who was so thoroughly sat upon and reprimanded, as it were, for the introduction into this Society of independent opinions. But time, of course, brings its own revenge. One of the gentlemen who was foremost at that time in condemning me for the method which I advocated brought out later editions of his book which fairly bristled with intra-uterine stems, and I felt in a measure compensated for the humiliation which I had suffered. If at that time, twenty years ago, a misfortune had occurred to me in the use of the intra-uterine stem, there was not a Fellow in this Society, nor an expert in the land, who could have saved me from being condemned to pay damages or being made to suffer the penalty of manslaughter. That was the state of things at that time, and all because of one or two unfortunate results from the supposed use of the intra-uterine stem for the treatment of retroflexion in the hands, I think, of Broca. It was not an intra-uterine stem in one sense of the word. It was an intra-uterine sound which, used as they used it in those days, produced a fatal result that condemned the whole method. At present, however, there is a fair feeling in favor of the use of the intra-uterine stem for the treatment of retroflexion.

Then arises the question which Dr. Mundé brought out somewhat in his paper, whether retroflexion is productive of symptoms that demand treatment. Now, I think that there is no question about the reflexes, no matter whether the endometrium is the seat of inflammatory conditions or not, for if the uterus is retroflexed or anteflexed, and sharply distorted, with circumscribed congestion in the flexed part of the organ, there will be certain reflex symptoms which demand relief. It is a very common experience to find young single women who get on quite well with a retroflexed uterus, but when they come to marry an entirely new complication arises—dysmenorrhœa, sacral neuralgia, and neurasthenia. If you will try the intra-uterine stem of proper construction and introduce it in proper cases and with proper precautions, you will never meet with trouble which will lead you to believe that you have committed a great error in practice.

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So far as the Alexander operation is concerned, I have had considerable experience—an experience which has not been altogether in favor of the operation. I believe that the principle is not scientific, and must differ from Dr. Cleveland about that. We must believe that the uterus was at one time hung up by the round ligament in a proper way, and that for some reason that round ligament proved ineffective to keep the organ in normal anteversion —provided that the round ligament has anything to do with the matter at all. Now, there has been some dynamic force at work in the pelvis which has produced retroversion, and if you attempt to correct it by shortening the round ligaments, you are treating symptoms, not conditions. You are not treating the etiological factors—you are treating results. I claim that is unscientific. It is bad surgery. There are forces in the pelvis which retroverted that organ. I doubt whether there is any proof to-day that the round ligaments are the organs which hold the uterus in the normal condition of anteversion. We must consider that these round ligaments are bands of connective tissue which undergo enormous elongation and then a certain shortening, and that shortening is produced largely through a retrograde change in tissues. And now it is proposed to bring that organ, which is retroverted through other causes, as I understand it, into the normal position of anteversion by shortening the round ligaments.

I saw Dr. Mundé perform the operation, and it induced me to go home and do it myself. Since that period, some ten years ago, I have performed about thirty operations, and I am not at all satisfied with the results. There was no special difficulty in finding the external ring and in securing the round ligament, but there was difficulty in bringing the organ forward, even with the finger in the vagina, in some cases. Now, we are not always sure that the pelvis is free from adhesions. Although we may not be able to diagnose adhesions by bimanual palpation, yet they may exist, being elongated and elastic in character, and they may make the procedure inoperative unless the uterus is held forward by a pessary, and it strikes me that that is the condition which nullifies the whole operation—being obliged to assist the correction of it by further surgical measures.

If surgeons who are so enthusiastic in favor of this operation

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could see the later results, they would find many relapses. That has been my experience, and I have seen and had the care of quite a number of patients after Alexander's operation performed by some of our best men. From my standpoint this is a logical result of the procedure, which has in no way removed or even modified the pelvic dynamics, in the operation of which we find not only retroflexions and versions, but even more serious changes in the pelvic viscera. Intra-pelvic dynamics is an almost unexplored field, and when more thoroughly studied and understood we shall be better prepared to treat the factors and shall be less content with a surgical measure that deals with the symptoms only.

Dr. Henry C. Coe, of New York.—I would like to reply to Dr. Van de Warker's argument, because I think that his premises were wrong. It was never the purpose of Alexander's operation to sustain the uterus as a dead weight. That is not the normal function of the round ligaments. I assume that no one will claim that they have much to do with keeping the uterus in its normal position, nor do those who have studied the operation most carefully believe that it is applicable to cases of prolapsus, since the weight of the organ should be sufficient to stretch the ligaments again. What one does aim at is to shorten the round ligaments until the fundus of the uterus assumes its normal position in the pelvis, in which position it is maintained principally through the intra-abdominal pressure. If we examine patients weeks and months after the operation we do not find the uterus in contact with the anterior abdominal wall; it may seem in the first degree of retroversion if the patient is lying on the back, but the shortened ligaments prevent the organ from resuming its former abnormal position.

Dr. Davenport touched upon one important point, namely, inflammation of the utero-sacral ligaments. I think that failure in some cases is due to the fact that these ligaments have become contracted by previous inflammation, so that when we pull the uterus up it puts them still more on the stretch. The patient had persistent backache, and we do not relieve her by the operation. It occurred to me that for this reason there is an advantage in the operation practised by Dr. Polk, since in opening the

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vaginal fornix we relieve this tension, and on bringing the uterus up into place we find that it is more movable, and the patient has not the pain which follows when the ligaments are put on the stretch. I have been tempted in performing ventral fixation to do tenotomy on these shortened ligaments, because I believe that they have been the cause of several symptomatic failures in my own practice.

A point referred to by Dr. Cleveland is prolapse of the ovary. In a good many cases the patient cannot wear a pessary because there is a large, prolapsed, tender ovary against which the pessary presses, and my own limited experience with Alexander's operation has been that the ovary has been lifted up enough to relieve the symptoms. I have a patient under observation now in whom the operation anatomically has not been a complete success; the uterus is not in normal position, yet the ovary has been elevated out of the pelvis and the symptoms have been entirely relieved. From a state of semi-invalidism the patient has been rendered able to go about and attend to her duties, so that symptomatically the operation has been successful.

It seems to me there is hardly any comparison to be instituted between the two operations. I had always understood that from their inception the indications have been entirely different. Ventral fixation, we were taught, was to be performed when one had positively recognized beforehand adhesion of the displaced uterus, with or without disease of the adnexa. The Alexander operation was indicated when those conditions did not exist, and if there is any doubt an anæsthetic should always be administered in order to exclude the possible existence of diseased appendages and adhesions. So each of the operations has its own distinct field, and there is nothing to be gained by comparing one with the other.

Dr. Thomas Addis Emmet, of New York.—Shortly after Mr. Alexander began to operate I had the good fortune to see him operate a number of times, and he allowed me to place my finger in the vagina while he was drawing the uterus forward. In watching the cases in that way I became fully satisfied as to the working of the operation, which is that the uterus is depressed in the pelvis as the fundus is drawn forward, and consequently

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I have never performed it, and for the reason that I believe it is the degree of prolapsus, not the degree of version, which causes the trouble. Prolapse of the uterus straightens out the vessels, they become larger, for they have no valves, and it is the amount of congestion thus produced which causes the symptoms in displacement. Of this I am perfectly satisfied. We all know that nothing gives a woman greater relief in extreme anteversion than to antevert the uterus still more if the organ be lifted to its natural position. If in retroversion the uterus is put in a position where as much blood leaves the pelvis as enters it, relief will also follow. If the Alexander operation ever gives relief, it is by accident merely, by elevating the uterus to such a point that the circulation can be restored. And the same objection applies, in my mind, to attaching the uterus to the abdominal wall. We cannot understand the working of these cases unless we fully appreciate the point that the versions and flexions are symptoms simply—the accidents, not the causes of the suffering. Of course, when the prolapsus has existed for some time and the vessels become dliated, a simple change of the version by the use of a pessary will not relieve the patient; but if by means of a pessary the uterus is lifted to a certain point, so that the circulation becomes restored, relief will be given. I believe, therefore, that it is by overcoming the prolapse, and not by changing any degree of version, that relief is obtained.

Dr. William M. Polk, of New York.—I am sorry to find myself again on the opposite side of the fence from Dr. Emmet. With regard to his explanation of the condition which exists, of course we cannot take issue, but we can, however, differ from him as to the actual results of the operation. Now, Alexander's operation has been before us since 1883, if I remember rightly, and various men have been performing it in this country and in others from that time to this. It was performed in New York in 1885 by Dr. Mundé and Dr. Hunter, and I believe by Dr. Wylie, Dr. Cleveland, and a number of gentlemen present here. Pretty much the same objection offered at that time is offered here to-day; but I find that some of the objectors of that day have become advocates now, and I presume that has been the direct outgrowth of clinical experience. After all, that is

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the test of most of our work. I believe that in every instance where the operation is properly done in proper cases the testimony will be identical with that which Dr. Cleveland has furnished here to-day, he having been, as he admits, one of the early objectors.

Now, the next question which is before us relates to the Alexander operation *versus* ventral fixation. I notice that several of the speakers would be left with a comparatively small number of cases upon which to do ventral fixation if they did not include in their list certain others which they claim have been wholly excluded from the category of Alexander's operation, the cases in question being such as suffer from the effects of adhesions binding the uterus in its abnormal position. Wipe those out of the list which has been suggested as favorable for ventral fixation, and you leave ventral fixation largely in the minority. Now, they can be readily wiped out in the manner suggested by Dr. Cleveland and by Dr. Coe, and, as has been done by myself repeatedly, by simply opening the vaginal vault and breaking up those adhesions. It is one of the safest procedures in the world. Examine the appendages, operate upon them or not as you may see fit, break up the adhesions. It is a measure which is within the reach of any operator, I do not care who he may be. Then proceed to do your Alexander operation, thus bringing that class of cases within the list of such as belong to this operation, and you make it, even in the words of those who advocate ventral fixation, immeasurably the better one.

Now, ventral fixation is unquestionably a good operation in its place. I presume that there is no operation in the whole range of surgery which has found an advocate but what has some place; but the main thing is to fix its place. It has a limited application, being proper only where you have performed cœliotomy, and consequently have found the easiest and most direct thing to do is to fix the uterus to the incision. It is in the interest of the patient that it is done, and it seems to me that aside from that it has no standing. Now, undoubtedly you will find many pelves in which ventral fixation is impossible. Any operator who has found the uterus in a male form of pelvis situated deep down in the basin, with the pelvic floor made rigid by more or less inflam-

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mation, knows perfectly well that the organ cannot be lifted in such cases so as to be held easily in position against the anterior abdominal wall. That class of cases is entirely outside the category of those permitting ventral fixation. They are not, however, outside of the limits of the operation suggested by the President and by Dr. Wylie. I shall not say the operation suggested by myself, for it is too poor a one to be considered. But mind you, the supposition is that you have opened that abdomen not for the purpose of doing ventral fixation at all, but for some other purpose which is of far more consequence to the patient. If you open the abdomen simply to do ventral fixation, you might far better open the cul-de-sac to break up the adhesions and do Alexander's operation.

One word as to the gentleman who originated this treatment. I think that there is hardly any operation which has borne the test of time so well as this. I mean by that the technique of the operation. A great many of us have made endeavors to improve upon it, and no doubt in a few instances, as in that of Dr. Edebohls and Dr, Cleveland, some success has been attained, but the essential steps laid down by Alexander hold good to-day as well as when he first advocated the procedure, and while we are glorifying the operation we might as well honor the gentleman who made it possible for us to do it.

Dr. J. M. Baldy, of Philadelphia.—It seems to me that Dr. Polk might have continued his remarks with regard to the cases to which ventral fixation is not suited. Now, in the limited number of cases in which I have found any operation of that character applicable, I have always used ventral fixation. If, as Dr. Polk has stated, the pelvic floor is rigid and the uterus cannot be brought up, it is not the retro-displaced uterus which is causing the trouble, and the operation is entirely inapplicable to that case, but Alexander's or any other operation is also out of place. The disease is inflammatory, is outside of the uterus, and it is to that you must look if you would cure the symptoms. But, as Dr. Davenport has stated, those cases are in the minority. There are a few retroverted uteri, uncomplicated by other disease, in which the patients suffer from symptoms, but those cases are few, and most of them can be cured by a pessary. That

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narrows very greatly the field for Alexander's operation, and what is left of that field is wiped out in toto in my own practice, because I cannot be sure that there are not adhesions. I frequently open the abdomen and find adhesions where I least expected them, and there are adhesions of such a character—cobweb adhesions—that it is impossible to say, even under ether, that they do not exist before the abdomen is opened. If they do exist, the Alexander operation is out of the question, as admitted by its advocates.

In cases of prolapsus I believe as some of the other gentlemen do, that these operations are of no use unless a plastic operation is done immediately—not a month or two months subsequently, but immediately. There are a small number of cases of complete prolapsus—and I say a small number because I do not wish to be misunderstood—in which there is an exceedingly large and badly diseased uterus, which has been entirely outside of the body for years, and in which the woman has passed the period of child-bearing. Here I think that hysterectomy is justifiable—supplemented, of course, by plastic work. Now, I tried in the past to do vaginal hysterectomy in a few of these cases, pushing the vaginal vault up and using a sling by which to hold it up. I have recently had one case in which I modified that procedure by doing hysterectomy from above, tying off the ovarian ligaments close to the pelvic wall, and then amputating the uterus well down below the internal os, thus giving a solid anchor for the vagina.

Dr. George M. Edebohls, of New York.—The broad subject which Dr. Mundé attempted to cover in his paper, that of the treatment of *all* the various displacements of the uterus, has scarcely been touched upon, the discussion thus far having been upon the Alexander *versus* other operations. Two years ago I presented to this Society a list of twelve cases of *complete* prolapsus of the uterus and vagina, in which I had performed at one sitting various plastic operations combined with ventral fixation, and stated at that time that whenever we have a case of *complete* prolapsus of the uterus and vagina which does not belong to that minority in which, for one reason or another, the removal of the uterus is indicated and justifiable, plastic opera-

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tions, properly performed, combined with ventral fixation, will suffice for a cure, and that this combination of operations should always be performed at the same sitting.

My further experience has confirmed the views which I expressed at that time. An incidental point mentioned by Dr. Mundé was that a future pregnancy must necessarily undo all the work you have done and reproduce the prolapsus. One of my patients became pregnant about a year after she was cured of complete procidentia by combined plastic operations and ventral fixation. She was delivered of a full-grown child at term, and when I last saw her, a year after delivery, she still remained completely cured of the prolapsus.

The next subject which Dr. Mundé touched upon, but which has not been alluded to by any of the speakers, is the comparatively new one of Freund's operation for prolapsus by the buried permanent circum-vaginal suture. While my experience with this operation has not been a large one, it has been probably among the earliest in this country. My first two operations were performed in January, 1894. Since then I have operated in three more cases, making five in all. I was very enthusiastic at first about the method—its simplicity, its freedom from danger, and its applicability to that class of cases where it was hazardous to perform a large number of plastic operations at one sitting. But time has somewhat modified my enthusiasm. Of the five patients operated upon the first one remains completely cured after a year and four months; one other remains cured after eight months; two others have had relapses, one after eight months, one after three months. The sutures gradually cut through the vaginal walls and the prolapsus was reproduced. I have not been able to follow the fifth case. Still, even with this showing, I consider the operation of much value. It is one which can be performed under cocaine-anæsthesia, and being so simple and without danger, it can be repeated if necessary.

Regarding the Alexander operation, a statement which has been frequently made, and one which I once believed in myself, has been to an extent disproved by my more recent experience. Dr. Cleveland has told us that whenever no round ligament is found in the canal it is the fault of the operator; that the liga-

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ment is there, but the operator fails to find it. I believed this myself until three or four months ago, when in a certain case, failing to find the ligament, I opened up the entire canal. Being still unable to find a trace of the round ligament I made a median abdominal incision, picked up the uterus and traced the round ligament from the cornu outward to the internal ring. There I found that, instead of taking the usual course down the canal, it turned bodily upward and outward immediately after emerging from the internal ring, and was attached along the under surface of Poupart's ligament as far outward as the spine of the ilium. In other words, the ligament turned the wrong way, going upward and outward instead of downward and inward. On the opposite side the ligament was normal in every respect. Again, two or three weeks ago, failing to find the ligament of either side, I recalled my first experience, made a median incision and traced the ligaments from either cornu uteri to the internal ring of the corresponding side, and again found that from this point it ran upward and outward, being in this instance inserted into the posterior surface of the fascia of the external oblique muscles out toward the spine of the ilium. These experiences will compel us to modify the statement that when the round ligament is not found in performing Alexander's operation it is the fault of the operator. In each of these instances mentioned the ligament was cut away from its attachments above, shortened, and then brought down and sutured into the canal in the usual way.

DR. VAN DE WARKER.—Will Dr. Edebohls define the degree of prolapsus in the five cases?

DR. EDEBOHLS.—In all of the five cases in which Dr. Freund's operation was performed there was complete prolapsus uteri et vaginæ, the uterus and vagina being entirely outside the body.

DR. POLK asked Dr. Edebohls if, in the distribution of the round ligaments in the last two cases mentioned, the ligament passed entirely through the canal or whether it failed to pass but partly through the canal and was distributed beneath the external oblique.

DR. EDEBOHLS.—The ligament passed in its entirety from the abdomen through the internal ring, and then immediately turned

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upward and outward to be inserted into the outer half of Poupart's ligament and the adjacent aponeurosis of the external oblique.

DR. MUNDÉ.—I am that sorry I had not time to read the whole of my paper, since it would have answered some of the criticisms which have been made. With regard to the remarks of Drs. Emmet and Van de Warker, I was very much amused, particularly when Dr. Van de Warker stated that the Alexander operation does not cure the disease, but it cures the symptoms. It reminds me of the exclamation of the Austrian general's reference to the youthful Napoleon, who was beating them right and left: "What is the matter with this fellow? He is not making war according to established principles. He is beating us under rules which we know nothing about!" We are satisfied with the Alexander operation if it cures the symptoms. I think that Dr. Emmet's objection can be answered on the same ground. No matter how the circulation is restored, provided that it can be restored, and restored by the Alexander operation, we ought to be satisfied.

As to using the intra-uterine stem for retroversion, I did not make any such statement in the paper. I never use an intra-uterine stem for retroversion. It is not necessary.

As regards my experience with and views on the Alexander operation, I have placed myself on record repeatedly. I first performed it on December 12, 1884; I published my first paper relating to it in 1886. I think that I had then done it four times. The same year I saw Dr. Alexander perform it. I have since performed it seventy-eight times, once since I wrote this paper. Substantially, I have followed the technique which Alexander first described.

I was very much interested in Dr. Edebohl's statement as to the round ligaments spreading outward in certain cases. In a case in which I was operating last winter, on opening the external ring I found a thick, purple cord which I at first supposed to be small intestine; it was as thick as my little finger. On opening the ring on the other side the ligament was easily isolated and was seen to be unusually thick. I then returned to the first side, cautiously opened the sheath of the suspicious cord, and

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found that I had to deal with a hydrocele and varicocele of the round ligament, to me a unique experience. The occasional irregular distribution of the round ligament would account for the failure of even experts to find it. There is no comparison between ventral fixation and Alexander's operation, as they are not performed for the same conditions.

DR. CLEVELAND.—It has been stated by Dr. Davenport that pain is a constant symptom after a great many of these cases of Alexander's operation. I think that is true, of course, in improperly selected cases, and it is also true in a great many of the cases in which there has been simply retroversion; but if these cases are watched for a sufficient length of time it will be found that the pain and discomfort disappear and the symptoms are relieved. Now, this operation is not done for retroversion, it is done for the symptoms due to retroversion, and in this paper I reported eighty-three cases in which it was performed for this reason. I have not heard from every one of these patients, but from a large majority; I have seen a great many and heard from others. In most instances after a sufficient lapse of time relief has been obtained. Other operators have received the same testimony from their patients which has fully satisfied them of the value of the operation.

DR. SMITH.—I quite agree with Dr. Coe that the round ligaments are not ligaments, but muscles, and if they are not used for some time they become fatty. If this is the case would we be satisfied to trust to two cords of fat to hold up the uterus? Would they not break when pulled upon? Judging from their nerve supply they were meant to contract and bring the uterus forward whenever there is a contraction of the abdominal muscles, so that the intestines will fall on the back of the uterus and push it upward. I say that ventral fixation is applicable to the widest range of cases. It will answer in every case in which the pessary will, and where the pessary will not. It will do in every case in which Alexander's operation will succeed and in which it will fail, and it would do in every case of what I consider one of the most difficult of all operations that I have ever seen—vaginal operations on the tubes and ovaries; it will do in those cases, and it will leave the uterus in normal position in-

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stead of in the hollow of the sacrum, and the patient is cured right then and there when the uterus is fastened to the abdominal wall. The Alexander operation I like well. I have done it twenty-one times with good results, having only one failure; but it is very difficult. Many men in this room have spent an hour in finding the ligaments, and have then broken them perhaps. In some of my cases the operation has ended in my doing ventral fixation. So even in the simple cases, admitting that you can open the abdomen a hundred times under modern methods without a death—that you can do even a hysterectomy with only three per cent. mortality—why not perform ventral fixation instead of resorting to methods which will require from six to nine months in order to effect a cure? If there was a death-rate from ventral fixation I would oppose it. But as there is practically no death-rate, and it rarely fails to cure, I am strongly in favor of it.

I am glad to hear Dr. Edebohls speak of the necessity of doing everything at once, viz.: 1st, curetting; 2d, repairing a lacerated cervix, or amputating it, in order to bring the uterus down to its proper weight; 3d, closing the vagina by Emmet's operation on the perineum; then opening the abdomen, detaching the tubes and ovaries if they are adherent, but not doing anything more to them if they are healthy, and fixing the uterus to the abdominal wall by two silk sutures. It will remain there forever. The whole thing can be done in an hour, and you can tell the patient that she is cured; no after treatment is needed, and no pessary need be worn. I know of but one failure, and it will never occur again. I did my first operation upon a Caughnawaga squaw, whose uterus was hanging out of her body between her thighs. The doctor took the sutures out at the end of fourteen days, which is much sooner than is my custom, and directions were given to send the patient home in a carriage, but instead of that she walked to the train at the end of two weeks, a distance of two miles; nevertheless, the uterus has remained in position ever since.

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# ABDOMINAL SECTION FOR PUERPERAL SEPTICÆMIA.

By J. Montgomery Baldy, M.D.,
*Philadelphia.*

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During February, 1887, there came under my care a patient presenting the following history: The second or third day after confinement she complained of a chill, and was found to have a tender and tympanitic abdomen, together with a quick pulse and high temperature. Under general treatment these symptoms abated somewhat, and she disappeared from observation for several weeks. One month from the date of her confinement she again demanded aid. At this time she was so emaciated as to be hardly recognizable. Her temperature was over 102°, her pulse over 130; she was having continued chills and creeping sensations, hectic, night-sweats and sleepless nights; her abdomen was swollen, tympanitic, and intensely painful; her bowels loose and fetid; micturition and defecation both painful; she was evidently fast approaching death. An examination of the soft parts showed no signs of a recent laceration; the uterus was subinvoluted, and on the left side there was a large boggy mass, firmly adherent, tortuous, and extremely tender. An abdominal section followed, when the left Fallopian tube and ovary were found distended with pus and were removed. The patient made a speedy and thorough recovery. To the best of my knowledge this case was the first one upon whom an abdominal section was deliberately and knowingly performed for puerperal septicæmia. It was reported in full to the Philadelphia County Medical Society,

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June 22, 1887, and the report published in the *Transactions* of that Society.

The case is an excellent representative of one class of patients suffering from puerperal septicæmia, upon whom an abdominal section is not only advisable but essential, if the lives of a certain proportion and the future health of the balance are to be taken into consideration. The practice of removing the uterine appendages which contain pus accumulations at this period of a woman's life has become so thoroughly established since the report of the above case as to need but casual mention, whether that pus accumulation existed prior to the pregnancy or occurred subsequent to this condition. Curettage and gauze packing of the uterine cavity, catheterization of the Fallopian tube, vaginal or rectal incision and drainage, together with all other so-called conservative methods may well be left in the hands of the timid. Where there is pus it *must* be evacuated, and it is much safer in the largest proportion of cases to evacuate it at a point of election than to allow it to empty itself with all the chances of immediate danger to life as well as the remote consequences.

There is one other point of so-called conservatism, the folly of which it is well to emphasize—the "waiting policy," on the supposition that the patient can be "built up and prepared for the operation." The patient is in her present threatening condition of health on account of the absorption of septic materials into her blood in many cases, she is exhausted and her life in danger, and a continued absorption of the septic matter from the accumulations in the pelvis may mean the difference between life and death. The dangers of further absorption far out-balance the good that may be obtained from medication, and delay for this reason is not justifiable.

So much for the true pus cases; but there is another and larger class in which there is infection of the Fallopian tube, the ovary and possibly the peritoneum without any formation of pus but with more or less decided tubal and ovarian disease, with peritoneal and connective-tissue exudate easily demon-

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strable by a local examination. Clinically such cases are met with every day in varying shades of intensity, and the question of treatment must be settled by two conditions: First, the general condition of the patient; second, the ability of the physician to determine whether or not suppuration has occurred.

In the diagnostic ability of the physician, then, rests the whole responsibility. It is not possible to be dogmatic on this subject, for the reason that there are so many exceptions which must be determined in the case of the individual patient by her condition at the time. In general, however, it is safe to say that in an attack of puerperal salpingitis and pelvic peritonitis dependent thereupon, no pus being present, an immediate operation is not demanded. Further, in those cases in which it is doubtful whether or not pus be present, the general condition of the patient permitting, delay is preferable, the patient being carefully watched, and a secondary operation performed later if necessary.

Infection passing from the uterine cavity through the Fallopian tubes into the peritoneal cavity, and terminating in a septic or suppurating peritonitis, may be dealt with according as the inflammation remains localized or becomes general. Most frequently nature succeeds in throwing out lymph in sufficient quantities to sooner or later isolate the infection, the resulting abscess being the larger in exact ratio to the virulence of the poison and the rapidity of its extension. The treatment of these intraperitoneal abscesses would resolve itself into a very simple matter could the physician be certain that no pus was contained in the Fallopian tubes or the ovaries. The difficulty here lies with the diagnosis, as in a large number of these cases no such assurance can be obtained. One line of treatment would be the performance of abdominal section and evacuation of the abscess without breaking up more adhesions than just sufficient to allow of the introduction of a single finger into the abscess cavity for the sake of exploration. If it is then found that there is no accumu-



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lated pus in either the Fallopian tubes or the ovaries, a drainage-tube should be placed in the sac and the abdominal incision closed. This plan of treatment is feasible, and has often been safely carried into effect. It is only necessary in order to avoid soiling the general peritoneal cavity, as the pus is being evacuated, that the proposed point of opening into the abscess sac be surrounded by sponges carefully packed in all directions. The operation is no more severe, and is fraught with no more danger than would be the opening of the abscess through the vagina, and has the additional advantage that if the tubal and ovarian abscesses are found they are readily detected, and their removal can be proceeded with at once and intelligently.

Should, on the other hand, the peritonitis have become general, the patient, as far as we can judge from past experience, will inevitably perish. To my knowledge there has never been reported an undoubted case of general purulent peritonitis, from any cause whatever, in which an abdominal section, or any other line of treatment, has succeeded in saving the patient's life. As exact and accurate intra-peritoneal diagnosis is more of a desideratum than a possibility, it were well, in all cases where the patient does not seem beyond all chances of recovery, to give her the benefit of the doubt in the diagnosis (however slight that may be) and operate. Not infrequently it may be found that a mistake has been made, and what was looked upon as the general peritonitis is more or less localized; and in just so far as the whole cavity is not involved will the chances of recovery increase.

Turning our attention now to that form of puerperal septicæmia known as puerperal cellulitis, that variety in which the infection has found its way from the uterine cavity by way of the lymph channels and walls of the bloodvessel into the surrounding connective tissue, we are confronted by a much more difficult problem, and one which will, no doubt, produce a wider difference of opinion. The first difficulty which presents itself is the old one of diagnosis. Is the cellulitis un-

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complicated by a corresponding degree of peritonitis and salpingitis? Has suppuration taken place in the connective tissue, or is the case simply one of exudation without suppuration? Are there pus-tubes, ovarian abscesses, or intra-peritoneal pelvic abscesses as the primary cause of the cellulitis, and accompanying it, or not? These are questions the answers to which will largely decide the treatment. It may at once be stated that the majority of cases in which suppuration has not taken place may be excluded from the category of those amenable to treatment by abdominal section. There still remains, however, for our serious consideration the suppurative group. When the tubes and ovaries are distended with pus, we have already decided in favor of abdominal section and removal of the offending organs. If, in addition, the broad ligaments and pelvic floor are infiltrated and contain pus, why stop short of removing as much of the disease as possible and draining the foci which remain? It must be granted that the entire area of infected and suppurating connective tissue cannot be removed, but at the same time those who have performed total hysterectomy in this condition will recall the fact that a large proportion of the infiltrated area has been reached, and that the remaining portion is opened up in every direction and left in a most favorable condition for drainage. Is there any method of incision, either single or multiple, which will so thoroughly lay open and afford such thorough drainage of the suppurating tissues as the removal of the entire uterus? Is not the additional fact that the diseased and possibly distended tubes and ovaries, as well as the diseased and possibly suppurating uterine walls, are eliminated as future factors of trouble a powerful argument in favor of this procedure? It is true that objections will be offered, and in fact have been advanced, that where the infection has once passed into the connective tissue the disease has ceased to be a local one, but has become general, and is beyond reach. Is it not true, however, that like objections have been offered by like men to every advance that has been made in medicine or surgery from

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the beginning of the world; and are we to stop in our investigations because of the timid and the irrational? Has, then, the disease become a general one, as is contended by these gentlemen? By no means, at least in its reasonably early stages. The disease is essentially a local one until such time as the blood is so broken down by the absorption of septic matters as to longer preclude the possibility of life. When has that point been reached is the question which must be answered, and it is one which it is by no means easy to determine. If the physician decide that, provided there be no more absorption of sepsis, the patient's chances for life are good, then it would seem that instead of wasting invaluable time in "building up" the woman, or "waiting," it becomes our duty to see that there is no more absorption, or, if perchance absorption cannot be stopped altogether, that at least it is minimized. What way of accomplishing this is there comparable to the removal of the bulk, if not all, the diseased structures—total hysterectomy? As a rule, if anything is to be accomplished in this line, it must be within the first week or two, as experience has shown that either death or beginning convalescence is usually an accomplished fact by this time. Each individual case must, however, govern itself, and the propriety of the procedure can only be determined at the bedside.

Equally if not more difficult cases to deal with are those in which no disease of the pelvic peritoneum, Fallopian tubes, ovaries, or connective tissue is demonstrable by an examination. The absorption of septic material is taking place from the cavity of the uterus, as demonstrated by the absence of all other cause, and the presence of purulent and fetid discharges. The so-called diphtheritic and gangrenous cases are of this variety. If intra-uterine douching, curettage, the free use of pure carbolic acid to the interior of the uterus, and drainage by gauze packing or otherwise, have failed to bring about a diminution in the high temperature and pulse, or if, after a few hours of diminution, these begin to creep higher

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and higher, especially if the discharges continue, what remains short of hysterectomy to put a stop to the disorganization of the blood? The hysterectomy in this case need not of necessity be total, amputation below the internal os being sufficient.

In attempting to carry out these principles two facts must stand forth with great prominence. If any great amount of good is to be accomplished the decision must be arrived at, and the hysterectomy performed early—the earlier, the greater the success. In attempting to arrive at an early decision there will be the greater danger of operating upon patients who would otherwise have recovered without this interference. The greatest care and discrimination will consequently be necessary in deciding for or against the radical procedure, and the more skilled the physician in diagnosis the fewer mistakes he will make *pro* or *con*.

After all has been said and done, the distinction between the different varieties is clinically not easy, and, as a matter of fact, the cases are generally of a mixed nature. It must be admitted that the field for hysterectomy in puerperal cases is not a large one, but that it exists to a certain extent is evident. The success following this procedure has been so far encouraging, in spite of the fact that it has been resorted to only a few times. The cases presented with this paper most probably do not represent the total number of operations performed, and equally true is it that probably those not recorded have all terminated fatally.

Puerperal septicæmia following rupture, bruising, or twisting of the pedicle of neoplasms complicating pregnancy and delivery need only be mentioned to demonstrate the necessity of abdominal section and removal of the neoplasm for its relief. Rupture of the uterus can only be included in this same category, in spite of the fact that some few cases have recovered without operation.

The following list of hysterectomies during the puerperal state do not include those in which a distinctly circumscribed

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collection of pus existed in a sac. It will be seen that the operations have not been many, but that sufficient success has been obtained to warrant further and more general trial. Nineteen cases have been reported by American operators with seven successes, and although some of the successful ones might have recovered without the operation, still a careful study of the reports indicates that quite the reverse is probable.

1. Baldy. Hysterectomy one week following miscarriage. Uterus soft and very friable; tubes distended with pus; ovaries large and soft; abscess at junction of tube with pelvic wall; died at the end of two weeks from pneumonia.

2. Baldy. Hysterectomy ten days after a miscarriage. Had been curetted five days before the operation. Fallopian tubes and ovaries healthy; broad ligaments distended with exudate and pus; uterine walls contained numerous foci of pus; no intra-peritoneal adhesions; died.

3. E. P. Davis. Hysterectomy two weeks after confinement. Tubes and ovaries healthy; numerous foci of pus in the uterine walls; recovery.

4. Lapthorn Smith. Hysterectomy fifth day after confinement. No disease of appendages; pus in the uterine sinuses; recovery.

5. Peterson. Curettage three days after abortion. Hysterectomy within the week; recovery.

6. Ashton. Hysterectomy one month after confinement. Abscesses of the uterine walls, also of the tubes and ovaries; died.

7. Pryor. Curettage fifteen days after confinement. Hysterectomy at once. Uterine walls disintegrated and gangrenous; appendages healthy; recovery.

8. Hirst. Hysterectomy one month after delivery. Uterine walls contained abscesses; both tubes and one ovary distended with pus; broad ligaments infiltrated, but not suppurating; recovery.

9. Hirst. Hysterectomy four weeks after confinement.

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Suppurative metritis; large, broad-ligament abscess; pus-tube and ovarian abscess; recovery.

10. Hirst. Hysterectomy two weeks after confinement. Diphtheritic endometritis; no involvement beyond womb; died.

11, 12, 13. Hirst. All followed abortions; all had suppurative metritis; all died.

14. Kelly. Hysterectomy five days after confinement. Puerperal metritis; recovery.

15. Montgomery. Hysterectomy within a week after confinement. Pus in uterine sinuses; died.

Boldt has performed the operation four times, with four deaths.

## DISCUSSION.

Dr. Fernand Henrotin, of Chicago.—I do not know that I am exactly ready to open the discussion on the several points brought out in the paper, for two reasons. First, there were some points which I did not catch very well, the acoustics of the hall not being good, so that I may have to ask for a little information from the author. Second, I expect to read a paper to-morrow upon the conservative treatment of purulent affections of septic origin, and which will be an answer in part to the argument offered by Dr. Baldy as to the choice of method in operating. Furthermore, to-morrow there will be a discussion upon the abdominal and vaginal routes which will clear up some points, or will at least change the opinions of some of the gentlemen present on that question, and it applies to septic conditions following childbearing as well.

Now, the author says that there is no more danger in draining abdominally with gauze after opening an abscess than in draining through a vaginal incision. To that statement I must take absolute and decided exception. A drain passed through the healthy peritoneal cavity is always infinitely more dangerous than where the peritoneum is not involved. Of course the man who is specially skilled in that kind of work does better than one who is

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not, but generally speaking, going through the healthy peritoneal cavity in order to reach the surface with one's drain is always accompanied by more danger than where this is avoided.

As to the propriety of taking away the uterus in some of these cases, it is decidedly my opinion that the method is proper under certain circumstances, and I shall allow that in doubtful cases it is proper to open the abdominal cavity to try to reach the seat of the disease so as to judge of the possibility of doing more conservative work. However, the general condition of the patient is frequently an indication as to how to proceed. The danger lies in the advocates of these measures resorting to them too frequently.

As to reaching pus in the pelvic cavity through the vagina, it can be done successfully. As I have stated, to-morrow I shall read a paper in answer to some of the questions pertaining to the conservative method of treating these cases. Three weeks ago I operated upon a patient in whom I made the diagnosis of hæmatoma of the right broad ligament, probably due to rupture of an extra-uterine pregnancy. The patient was extremely low, and I had expected to find a great deal of pus in the pelvis, and yet when I opened the abdomen much to my astonishment there was no pus, but general infection running up beyond the umbilicus, with greenish gangrene of the uterus, tube, and lower part of the omentum, in fact, the most foul mass you could get into, and yet apparently no pus, but a sort of cheesy, fibrinous exudate of a greenish color. I was obliged to make a clean sweep of everything. Although the patient was extremely low, much to my surprise she made a complete recovery. As to the demarcation, the general principles of surgery must guide us. I believe that in such cases as Dr. Baldy's, complete extirpation and the removal of all septic material which can be reached will give the best chances.

Am I to understand that Dr. Baldy has never seen a patient with general diffuse peritonitis under such circumstance gets well?

Dr. Baldy.—Suppurative.

Dr. Henrotin.—Suppurative. That is hard to distingish. It is certainly a fact that septic peritonitis from early rupture of an appendicitis, for example, does get well if operated upon soon

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enough, and I have no doubt that if one should examine the discharge he would find it was pus the result of septic diffuse peritonitis extending over the whole cavity. But if it persists beyond a certain period, say thirty-six or forty-eight hours, the patient cannot be saved. I have never yet seen a patient recover in whom a pus sac enclosing virulent pus ruptured and the matter had become generally distributed over the peritoneum.

There is some question as to whether the abdominal or the vaginal route should be chosen in operating, but that will be discussed to-morrow. I shall later make a plea for a conservative method, trying to reach these cases early and rationally, and thus avoiding more severe and dangerous operations.

Dr. W. Gill Wylie, of New York.—My work has not been much known as relating to obstetrics, still I have always taken a deep interest in that branch, have accepted some obstetric cases, and through my position in Bellevue I have seen many puerperal cases, especially those in which the pus-collection has become localized. My experience tells me that no one can make an exact diagnosis at the beginning; that is, as to the exact point which the poison has reached, and a mistake would be made, I think, if the principle stated in the paper were literally followed by the profession and the uterus were removed in all cases. A great many patients can be completely cured by a very simple procedure. That is, by irrigating the uterus every hour, so as to clear it completely of septic germs and prevent their further development. I have done this so frequently in Bellevue that, when I examine a woman for puerperal sepsis and cannot determine that the pus is located in the peritoneum, in the lymphatics, veins, or cellular tissue, I do not undertake any operation until I have tested washing out the uterus every hour for six hours. Any one who has not tried this, but has depended upon the fashionable method of packing with gauze, will be surprised to find how many patients can be completely cured by the former method. Within a year I have cured two young women who had been given up by those who had tried curetting and packing and were ready to open the belly. In one I curetted and irrigated the uterus, in the other I simply washed it out for six hours. Yet any one following the teachings of the paper

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just read would have performed hysterectomy, and I have no doubt would have killed the patients.

I agree with the last speaker, that a great deal can be done by conservative work if the patient is seen early, say within three days. For instance, in a case of this kind, I was sent for by a prominent practitioner of New York, not because he thought it worth while for me to see the patient, but because the family insisted that I should. When I entered the room the doctor said that nothing could be done, that the temperature was 105.5° F., the pulse was exceedingly fast, the abdomen was much distended. I examined her, found the uterus pushed high up, tapped her with a silver trocar, washed out the vagina, drained off the pus without an anæsthetic, and the patient made a good recovery.

I believe as much as any one in opening the belly, but I do not believe in opening it in these cases until a test has been made of other measures. Whether the patient can be cured when the puerperal sepsis has entered the peritoneal cavity is a very different question. The difficulty is to get hold of the cases, and, as the last speaker has said, very much depends upon what kind of fluid is in the cavity. In a good many cases it is localized. If it is not localized it is difficult to make a diagnosis. Then, again, I am satisfied that the character of the poison differs, just as it differs in appendicitis; that is, there are some poisons which, if they get into the peritoneal cavity, will kill the patient. But as to the doctor's statement that general suppurative peritonitis cannot be cured by operation, I am sure that it can. I have succeeded, not in many puerperal cases, but in others. I recognize the difficulty of getting at these puerperal cases. The mistake is that so much time is lost, under supposition that the poison is elsewhere. But if the condition can be diagnosed, I am sure that some can be cured. In rupture of abscesses, especially abscesses about the appendix, with pus all over the peritoneum, the inflammation not being localized, I have effected cures. I am satisfied that the sepsis in the cases under discussion varies very much in its intensity, so that we cannot make general statements to cover all cases and support them by practical experience. I believe that in nine cases out of ten, if not in nineteen out of twenty,

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of what we call puerperal fever, where the disease starts in a few days after labor with chill and fever, if the uterus is emptied and washed out every hour for six hours and the treatment is begun within twelve, twenty-four, or forty-eight hours after the first chill, the patients can be cured. This mistake is made, that the washing is not done frequently enough. It should be repeated every hour.

Dr. Andrew F. Currier, of New York.—I find it somewhat difficult to take up the thread of the discourse where it was dropped yesterday. The paper which was read was upon a subject of the greatest importance; one upon which ideas have not yet been thoroughly formulated. It seems to me, however, that there are some points upon which we, as a society, should declare ourselves quite definitely, and perhaps the best way to get at the matter is by the process of exclusion—by narrowing ourselves down to the proportion of cases which are operable, because that I take to be the salient point of the propositions of Dr. Baldy.

I think that the question of operation in cases in which the peritonitis is diffuse, with septicæmia, whether with or without suppuration, is one which we can decide definitely. Certainly from my own experience I feel that these cases should be excluded from the question of operation. Dr. Wylie, and I believe Dr. Henrotin, thought that there were cases of this character which could be safely operated upon, or with some prospect of success. But for myself I feel that those in which septicæmia is general, and the peritonitis diffuse, are beyond the pale of operation.

On the other hand, those in which the suppuration and inflammation are extraperitoneal are quite within the line of operation, and if we observe the general surgical law of making our incision at the most dependent point, we can hope for successful results. I have operated in several cases in which that condition obtained, and in all but one the result was satisfactory.

That brings the question to those cases in which the inflammation is confined to the uterus and the adnexa, and there is where our difficulty comes. Dr. Baldy states that if an operation is to be done, it should be done in the course of the first week after confinement. But we all are aware that many of these

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cases which come to us as specialists come after the first week. In fact, in some cases the evidences of inflammation are not apparent until after the first week. It very frequently happens that when we see the patients they are saturated with septic infection, and the question of doing so grave an operation as removing the adnexa with the uterus becomes one of great magnitude. I feel from the experience which I have had in this matter that removal of the uterus and adnexa when these organs are involved in puerperal septicæmia is, in most cases, not likely to be followed by success. Dr. Baldy said very truthfully in his paper that there were probably many cases which had been operated upon which were not reported, and that those cases were usually fatal. I believe that the number is much larger than many of us suppose, and if we take that fact into consideration, with also the fact that only seven out of nineteen cases which have been reported were successful, we may well have doubt as to the propriety of resorting to so grave a procedure. It is certainly a fact, as stated by Dr. Lusk in a discussion which took place on this subject before the New York Academy of Medicine some weeks ago, that some of the patients will recover without any operation at all. That, I think, ought not to be lost sight of. So that for myself, the question of doing abdominal section, and particularly of removing the entire uterus in cases of this character, must be reserved for very few cases.

There is a class of cases in which the products of inflammation are extraperitoneal, sometimes in the broad ligaments, which are occasionally amenable to operation, in which peritoneal section must be made, but made for the purpose of determining what the situation of the inflammatory products is; in those cases the median peritoneal section may be followed by a lateral section, the products of inflammation may be removed in that way, and the result will be satisfactory. I recently had a case of that kind in which the result was all that could be desired, although the patient was almost moribund at the time of the operation.

Dr. Charles P. Noble, of Philadelphia.—This subject, of course, is a very large one, and therefore I shall confine myself to a few parts of it. I think, practically, that it should be

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brought out very sharply that there is a difference between early cases and those seen late. For example, the first case referred to by Dr. Baldy was more properly an operation for the removal of pus-tubes of puerperal origin than for puerperal sepsis. Now, those cases in which there is pyosalpinx, or abscess of the ovary, or a circumscribed collection of pus in the pelvis, reaching the surgeon three, four, six, or even ten weeks after labor, are very different from cases of sepsis seen a week after labor. I think that this point cannot be too strongly emphasized.

With regard to the second class of cases, in my opinion there is a small field for puerperal hysterectomy, and it is for those cases in which the recognized methods of treatment fail to arrest the process which has started as a septic endometritis. There is a small class of cases, I repeat, in which the recognized method of treatment fails, and we are brought face to face with a condition which will, to the best of our knowledge, kill the patient if she is left alone. There, I think, removal of the uterus and adnexa is indicated. Yet, if the patient were thoroughly septic, I would not operate. I have interfered under those circumstances and the result was what I had supposed it would be—the patient died—and I think that will be the result in all cases in which the patient is thoroughly septic.

Hysterectomy must be done during the first three or four days, otherwise there will be no use in doing it at all in acute cases. In the cases seen late in the puerperal month the general principles which govern our pelvic work and in peritonitis due to appendicitis, etc., apply, and I do not feel myself that there is anything particularly new to be said upon the subject. It is occasionally necessary to take out the uterus when removing the appendages for gonorrhœal pus-tubes, and the same statement applies in removing the appendages for puerperal suppuration. But that is absolutely a different case from removal of the uterus, which is itself the seat of infection, and which is causing general sepsis during the first week of the puerperium.

Dr. H. C. Coe, of New York.—Pardon me for referring briefly to my own recent experience. I had been looking for a favorable case of puerperal peritonitis in which I could operate,

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and I found one, as I thought, about two weeks ago. Several which I had seen previous to this one were rejected as unfavorable. In this instance I operated on the fifth day after the initial chill. The patient was in excellent condition at the time of the operation—the temperature not high, the pulse 110. I found the condition which would be characterized anatomically as the congestive stage of peritonitis, though not a general congestion. There was a small amount of serous fluid in the abdominal cavity; no adhesions, no organized lymph, the tubes and ovaries practically free. There was an acute salpingitis and suppurative oöphoritis on both sides. The operation was performed quite rapidly. The uterus was not removed, because it was small and well contracted, and I did not wish to have any additional shock or to prolong the operation. The abdominal cavity was washed out thoroughly and drained through the vagina. The patient died within twelve hours. She had reacted well after the operation; her temperature had fallen below 100° F., the pulse to about 100, but she suddenly collapsed and died.

That was certainly a most discouraging test case, for I believe that it was as promising as one could select. The operation was private, and was performed under the most favorable conditions. I was not able to obtain an autopsy, but hemorrhage could be excluded positively, and there was no indication of heart or renal trouble. So that, in my judgment, it is almost impossible to select a case of puerperal peritonitis at such a stage of the infection that we can say that it is localized, even when there seems to be no clinical evidence of general infection. The patient may suddenly collapse, as those do who have become thoroughly infected, and although the operation may be perfect surgically, yet it is not done soon enough to save the patient. My experience, then, certainly agrees with that of the gentlemen who characterize abdominal section for diffuse puerperal peritonitis as purely an experimental operation, just about the same as cœliotomy for rupture of the parturient uterus, in which I have had one success out of four cases, the other patients having died promptly.

Dr. A. Lapthorn Smith, of Montreal.—As I have reported one successful case of removal of the uterus for puerperal septi-

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cæmia, I take great interest in this question. As was said during the discussion, there is no doubt that the majority of cases of puerperal fever can be cured by washing out and draining the uterus. Drainage especially I have found very valuable—introducing a wick of iodoform gauze into the uterus to keep the canal open. I have found in several cases, on drawing down the anterior lip of the uterus with bullet forceps and straightening out the flexion, that a quantity of pus gushed out. The organ having been bent upon itself, closed the outlet, and converted the cavity of the uterus into an abscess-cavity.

Now, in those cases in which, after washing out, we see that the patient is steadily getting worse, instead of standing by absolutely powerless, let us do something. If it fails, no matter, for we are trying to do something for a disease which otherwise invariably proves fatal. In the case in which I saved the woman I thought that there might be a pus-tube or suppurating appendix, but on opening the abdomen I found neither, but peritonitis in the congestive stage. I was loath to sew up the wound again and leave the uterus, which I felt was the cause of the infection, so I lifted it out of the abdomen, put two pins through it, encircled it with a serre-nœud, removed the uterus, and closed the abdomen, You see there is a great difference between that and total removal of the uterus as it is done to-day; cutting through the broad ligaments exposes the infected lymphatics so that the virulent pus which they contain infects the peritoneum.

In another case of peritonitis after a miscarriage I removed the tubes and ovaries, as I did not venture to remove the uterus on account of the criticism which I had received in the first case. On removing the appendages I could see numerous little points of infectious fluid exuding from the cut vessels. That cut surface had to be left in the peritoneal cavity, and the woman died. If I had tried the plan of shutting off—isolating the infected area by the serre-nœud wire—the patient might have been saved. In another case a colleague of mine made an explorative incision, and I saw a string of yellow beads running along the side of the uterus, which were the infected lymphatic glands. If a wire had been put around the uterus, shutting off the circulation from the seat of infection, the woman

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would have stood a better chance of recovery. Why not try that method, some of you gentlemen who have frequent opportunities? You certainly infect the peritoneal cavity by the line of incision when the uterus is removed entirely and a raw surface is left. Although these cases are almost hopeless, would it not be worth while trying the same method by which I succeeded in saving one patient?

Dr. Baldy, in closing the discussion, said: I drew the line so closely and critically before that I shall simply attempt to answer one or two objections which have been raised. In the first place, I tried to impress the fact that the class of cases in which the operation (hysterectomy) is indicated is an exceedingly limited one, and that, as suggested by Dr. Noble, the line must be drawn very sharply between chronic cases which have gone on from three to five weeks and acute puerperal cases. Now, if we are called after the case has gone on a week or two weeks, we have oftentimes no chance to wash out the uterus, as suggested by Dr. Wylie, or to curette, or do anything else. The woman is often moribund. It becomes, then, a question of hours, for enough sepsis has been absorbed into the blood to kill her unless we at once stop the absorption. I believe that in a limited number of cases of this class the operation will save the patient, and since, as a matter of fact, seven successful cases are on record, a possibility of success in that line is beyond doubt. Of course we may make a mistake in diagnosis and may operate on cases when we should not. I take it, however, that gentlemen will be rather loath to operate, and it is not likely they will operate in such cases without very strong reason. It is true, on the other hand, that they may operate in cases which, could they understand them fully, they would recognize as being almost hopeless. Such patients would always die at any rate, and every one saved would be just that much gained.

Dr. Coe's patient died, it is true, but it seems to me it is no reason why it should discourage Dr. Coe from trying again in a similar case. He cannot expect to be always successful; in fact, he will undoubtedly lose many more than he will save. However, his case was such a one as would have died at any rate, and if he succeed in saving only a few such he must needs be thankful, and

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his work will be justified. The probability is that in a second or a third case the operation might save the patient.

Now, as to washing out the uterus and flushing it every hour. As a rule we see these patients as consultants when the time has passed for curing them by that means. If you curette and wash out the uterus once, and it does not succeed, what is the use of going on washing out when you can squeeze pus out of its walls? There is often at this time pus in the walls of the organ, in which case washing will do no good. Just so far as our ability advances in the direction of diagnosis, just so far shall we make fewer mistakes.

Dr. Henrotin and Dr. Wylie both, I believe, spoke of cases in which there was rupture of pus-tubes, and in ten hours they opened the abdomen and found it full of pus. These patients will recover, but they are not cases of general suppurative peritonitis. They are simply cases in which pus is emptied out of a localized pus sac into the general peritoneal cavity, and general suppurative peritonitis has not yet developed. In twenty-four hours or more it will probably develop into such a case, and is then hopeless under any treatment. This is an entirely different class of cases from those to which I referred.



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# RENAL INSUFFICIENCY IN GYNECOLOGICAL CASES.

By James H. Etheridge, M.D.,
*Chicago.*

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Anyone writing to-day on gynecology and failing to take up for consideration some operative procedure is extremely liable not to find many readers. To read all of the current gynecological literature impresses one with the conviction that the surgery of pelvic diseases comprises about all that is good and worth knowing of the recent advance in this field of research. It is deplorable that appearances warrant such an inference, yet it is a fact that they bear no other interpretation. At no distant day there will be a reaction against this *furor operativus*, and then more attention will be paid to the legitimate sphere of remedies in gynecology. The vast majority of physicians are incapable (from environment and lack of training) of performing surgical operations on women, and are compelled to limit their gynecological exploits within the range of remedies. To such men the writer hopes that these pages may commend themselves.

Every successful gynecologist takes into consideration each and every organ and function of his patient before he lays out a plan of treatment. He knows superlatively well that each patient has disorders outside of the pelvis. He knows furthermore that it is the exception for a woman to present herself for his consideration who is sound in every other organ and has trouble only in her pelvis. Whenever

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a practitioner says that his gynecological patients rarely or never have any other derangement than pelvic disorder, we all understand that he rarely sees anything but the generative organs, and that, therefore, he has mental nystagmus; consequently he is an unsafe leader.

Many years ago, while the writer was attending to a large indoor dispensary practice, he was impressed by the numerous general symptoms given by gynecological patients. He therefore began a system of case-records which included every symptom given by one hundred consecutive patients. The result was interesting and extremely instructive. Those one hundred case-records led to absorbingly interesting investigations into the various kinds of dyspepsias, headaches, backaches, and neuralgias. During these investigations the interdependence of disorders and their symptoms was brought out so clearly and simply that the wonder is that its universal recognition does not obtain.

Attention is called in this paper to one set of organs—the kidneys—and to one fault only of those organs, and that is their *insufficient work* independently of their organic disease. In all that is said in this article no reference whatever is made to patients with organic kidney disease, a fact to be distinctly understood; such patients are dealt with by the nephrologist. Women with sound kidneys only are referred to. Concerning them, this declaration is laid down: *Very many gynecological patients suffer greatly from renal insufficiency, and properly selected diuretics will relieve many of their symptoms commonly referred to the reflexes from pelvic diseases.*

Urine is composed of water and certain solids dissolved in it. The amount of solids is proportionate to normal body weight. This proportion is fairly constant—enough so to constitute a safe working base. If the solids are excreted in sufficient quantity, a normal condition exists. If they fall short of it, say twenty per cent., an insufficient quantity is excreted, a condition called "renal insufficiency."

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Retained excretions poison the system; if in large quantities, they produce death; if in smaller quantities, they produce the various manifestations of poisonous action on tissues for which they possess an elective affinity. We see this fact illustrated in uræmic convulsions and death in the last stages of pregnancy, and in the products of cutaneous excretion checked in taking cold, producing a bronchitis, a diarrhœa, or a muscular rheumatism. It would be a most interesting study to ascertain what the effect, in doses ranging from the maximum to the minimum of the various human excretions introduced into the stomach, would be. We would unquestionably find produced very many of the symptoms for which we are daily, year after year, called upon to prescribe. Daily do we all see patients showing in varieties and shades of difference the effect on their systems of poison by sweat, feces, urine, and bile. Indeed, a large share of a physician's life is spent in getting rid of these poisons and of what they have paved the way for developing.

Urinary solids are a lethal poison when given in sufficient quantity. Like all other poisons, their effect depends on their dose; if it be small the effect is inconsequential, if large the effect is much more serious, if very large the victim succumbs. Any patient with renal insufficiency may be considered as one who has absorbed urinary solids into his blood where they can produce their effect with precision.

Every human being can acquire renal insufficiency of varying duration. Unquestionably we all suffer from it at times, as is indicated by nervousness, or dyspepsia, or bronchitis, or neuralgia, or, in some women, by comparative amenorrhœa.

It is not yet incontestably settled what tissues are affected by urinary solids especially. Four years ago Bond (*Amer. Journ. of the Med. Sciences*, September, 1891) attempted to show that serous membranes are liable to take on inflammations in patients with renal insufficiency. He would see in the patient who has recurrent attacks of pleurisy one who

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retains too much urea. It is a simple fact that many patients who eventually die of organic kidney disease, whose renal insufficiency of years' duration previously, unquestionably produced at length that organic kidney disease, were patients who had recurrent pleurisies. Similarly we meet with many patients who have repeated attacks of bronchitis, with profuse secretion, produced by renal insufficiency. Even their breath, in many cases, has a urinous odor, indicating that such patients are trying to excrete urinary solids through the pulmonary mucous surfaces. Such patients are always, and never otherwise, cured by the supervention of free urinary excretion, spontaneous or induced. Many persons cannot take cold without suffering temporary renal insufficiency, which in turn causes a bronchitis or a diarrhœa. Who does not know the superb effect, in such cases, of Dover's powder, with its powerful diuretic action, or of sweet spirits of nitre, in small hourly doses?

On the nervous system we have unquestioned evidence of the deleterious effects of urinary solids in the production of the various neuralgias. Lithia and small doses of mercury quickly remove the hyper-accumulation and the neuralgia disappears. Mucuous membranes respond very decidedly to the continuous or to even the intermittent dosage of renal solids. Proof of this is seen in the serous diarrhœa of uræmia, where the patient may be said to be attempting to urinate from the intestinal mucous surface. Gastro-duodenitis illustrates the same fact concerning too much uric acid remaining in the system. Unquestionably the same idea is seen carried out in contributing to the perpetuation of *chronic perimetritis* so often encountered, for it is a simple clinical fact that the administration of stimulating diuretics in cases presenting this condition constitutes one of the most powerful adjuvants to other treatments.

If the various ingredients of the urinary solids retained unduly in the system can produce so many serious symptoms, or, to put it perhaps more conservatively, if they seem

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to be associated with such serious symptoms, which disappear under the successful treatment of such retention, then they assuredly demand most respectful consideration. For it is a matter of daily observation that we see gynecological patients with renal insufficiency who present amenorrhœas, neuralgias, pelvic peritonitis, dyspepsias, bronchitis, cutaneous eruptions, headaches, backaches, leucorrhœas, nervousness, insomnias, etc.

To arrive at a more definite conclusion I have had an expert physiologist construct the following table, showing the amount in grains of normal excretion of urinary solids in human beings weighing from ninety to a hundred and eighty pounds. Since these figures refer to perfectly healthy human beings, it is safe to adopt a diminished amount of grains of excretion as a working basis. Accordingly, the two extremes of estimates of the urinary solids may be safely adopted as five hundred and eleven hundred grains:

| Weight. | Urinary Solids. |
|---|---|
| 40 pounds | 392 grains. |
| 50 " | 479 " |
| 60 " | 563 " |
| 70 " | 639 " |
| 80 " | 716 " |
| 90 " | 789 " |
| 100 " | 854 " |
| 110 " | 916 " |
| 120 " | 974 " |
| 130 " | 1028 " |
| 140 " | 1078 " |
| 150 " | 1150 " |
| 160 " | 1198 " |
| 170 " | 1237 " |
| 180 " | 1260 " |
| 190 " | 1300 " |
| 200 " | 1330 " |

To estimate the urinary solids is an extremely simple matter. To be of value, we must understand, in a general

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way, how much of solids each patient should excrete. Women, according to height, weigh from ninety to one hundred and eighty pounds. Reference to abnormally lean or stout women is not included in these extremes. Many women do not even weigh ninety pounds, yet they are perfectly healthy. Then again there are very many women who weigh over two hundred and fifty, or even three hundred pounds. Such extremes of body-weight are disregarded. The amount of solids voided by healthy human beings, as stated before, may be assumed to vary from five hundred to eleven hundred grains daily, according to body-weight. Thus the woman weighing ninety pounds ought to pass five hundred grains, and the woman weighing one hundred and eighty pounds ought to excrete eleven hundred grains of urinary solids. It is an easy matter to estimate the amount of solids that women of intermediate weight should void.

Various working formulæ exist for estimating solids. It is understood that *all* solids of the urine are thus included. Innumerable articles have appeared in the past on the methods of estimating urea. The topic under consideration includes not only urea; it includes everything solid. The formula herein recommended is known as Haines' modification of Haeser's method.

Its simplicity and speedy solution relieve it of all the objections belonging to all formulas relating exclusively to estimating urea. It is this: *Multiply the last two figures of the specific gravity of the urine by the number of ounces voided in twenty-four hours and the product by* $1\frac{1}{10}$. Thus: If the amount of urine voided in twenty-four hours be 36 ounces and its specific gravity be 1021, the formula would read 36 times 21 times $1\frac{1}{10}$ equals 831, the number of grains of solids contained therein. These figures can be obtained at once upon measuring and taking the specific gravity, and the amount of solids calculated without a moment's delay. This estimate includes urea and all the other solids. Should we wish to estimate the amount of urea separately, that is

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quite another matter, requiring time and delicate chemical manipulation. This advantage exists in favor of estimating the amount of solids, that, if there is insufficiency, there is unquestionably a deficiency of urea existing also. In a large practice, where such calculations are made daily, sometimes several in one day, the item of time-saving is an important one.

Patients suffering from renal insufficiency should be regarded as poisoned patients and treated accordingly, for they are cases of veritable uræmic poisoning. They present symptoms varying in intensity according to dosage. Women passing only fifty per cent. of the normal amount of urinary solids are extremely numerous. It is simply astonishing to see how common renal insufficiency is in gynecological cases. Women passing not to exceed four hundred grains of solids daily present various degrees of nervous irritability. When the amount is lessened to, say, three hundred grains or less daily, the condition of nervousness becomes a very serious semeiological factor. Let a patient passing only the latter amount of urinary solids take a severe cold and she will develop a bronchitis, or a severe neuralgia, or a fresh attack of perimetritis, or a pleurisy, or some other malady equally grave. When the solids are diminished still further, as to two hundred grains in twenty-four hours, we shall find the nervous system so seriously invaded that our most solicitous attention is demanded. And with the amount still further diminished, say, to one hundred grains of solids per diem, our patients will be found dangerously near the verge of uræmic convulsions, the condition not infrequently found in the last weeks of gestation.

What are the evidences that certain tissues are invaded by urinary solids that they present symptoms that are to be associated with renal insufficiency? It is difficult perhaps to answer that question dogmatically. To give an unassailable reply involves a chemical analysis of the tissues presenting symptoms that may be alleged to arise from urine

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poisoning, that has not been made so far as our reading extends. I am not aware that the pelvic peritoneum, or a bronchial tissue, or a nerve that presents urgent symptoms in a case of renal insufficiency, has been examined by a chemist and declared to contain urinary solids. Therefore the *experimentum crucis* may be said to be wanting. Yet notwithstanding this deficiency, we shall, till such chemical analyses have been made, be compelled, from a clinical standpoint, to associate very many urgent symptoms with the existence of renal insufficiency. Synthetically, however, we have a great amount of proof that the urinary solids *do* produce symptoms in certain tissues, and that is the therapeutics. For, if appropriate diuretics are used in such cases, it will be found that the excretion of urinary solids will be increased, thus indicating that they are called in from the tissues that do not contain them normally, and at the same time the urgent symptoms subside.

To illustrate: Mrs. C., multipara, presented, in addition to a marked general metritis associated with a deep, double laceration of the cervix, an obstinate bronchitis with profuse secretion. The cough produced such violent succussion of her pelvic organs that her metritic symptoms were intensified, in the way of pain and greatly decreased ability to go about her daily duties. Vesical irritability and increased leucorrhœal discharges added to her general misery. Soon her digestion was deranged, and a degree of anæmia supervened with its train of nervous symptoms. Cold weather brought on bronchitis, from which she was comparatively free during the summer. Winter after winter she had been an invalid, submitting to gynecological treatment fruitlessly. She had spent the winter season in southern France, in Italy, in Spain, in Cuba, only to find invalidism return upon coming home. At length the modern treatment of dilating, curetting, and operating on the cervix came to us, and she passed successfully through that line of procedure with the result of a vast improvement in her general condition. Still

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the advent of winter developed her bronchitis, which was followed by bladder-distress, leucorrhœa, and gradual running down. Not till the second winter after the operations mentioned were the kidneys questioned. It was found that two hundred and ninety-eight grains only of urinary solids were passed, when she ought to have voided eight hundred and fifty grains. This discovery was made in 1890. She was at once put upon a stimulating diuretic, tonics, and a laxative. In thirty days her urinary solids were increased to nine hundred and fifty grains, the cough had entirely disappeared, and she was on the high road to recovery. After March 1st she had resumed her social obligations, every old symptom had disappeared, and she reached a degree of health that she had not known for years.

The only explanation of the cure of this patient is to be found in the removal of the condition of renal insufficiency. The bronchial mucous membrane was apparently attempting to play the part of the kidneys, and the irritating quality of the sputum perpetuated the cough. The vesical mucous membrane, irritated by the acrid character of the urine that was passed, as well as by the violence of the contractions of the abdominal muscles in coughing, caused the irritability of that viscus. The increased leucorrhœal discharge could be produced by the vicarious attempt of the endometrium to discharge urinary solids in its imperfect way, aided by the continual engorgement of the uterus incident to the sudden and violent retardation of the venous blood-flow that always accompanies the effort of coughing.

Almost numberless illustrations of cases of renal insufficiency in gynecological cases can be cited; not all present it by any means. When it is detected it should receive our most careful consideration. No intimation is here given that it is the most important factor in diseases of women. To set up such a claim would be most absurd. The aim of this article is solely to call attention to one line of treatment that has been all but universally neg-

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lected heretofore, and to invite observations and original investigations.

There is the gravest reason for thinking that a very close relation, even that of cause and effect, exists between renal insufficiency and pelvic disorders. The developmental phase of the renal and generative organs constitutes that reason. Embryologically these two sets of important organs arise from the same source. The mesoblast in the ovum gives rise to the muscles, bones, circulatory and lymphatic systems, the urinary and generative organs. From this fact it becomes an easy matter to infer that derangements in one set of these organs can produce, in a reflex way, if you please, or at least are very frequently associated with derangements of the other.

Since observation shows the numerous cases of coexistence between renal insufficiency and neuralgias, mucous-membrane disorders and serous-membrane inflammations, one cannot but question the possibility of this insufficiency producing or permitting amenorrhœas, dysmenorrhœas, leuchorrhœas, and attacks of pelvic peritonitis. It is strongly emphasized that the position is *not* assumed that all cases of these disorders are produced by renal insufficiency, but, from the fact that many of them are relieved by including in the treatment remedies that increase the urinary solids, the conclusion cannot be resisted that cause and effect actually exist between many of them and the deficiency of urinary ingredients.

## DISCUSSION.

Dr. A. J. C. Skene, of Brooklyn.—I do not intend to discuss either the President's address or Dr. Etheridge's paper. In fact, I think so highly of both that instead of opening a discussion, it would be wiser to express my appreciation and to say no more. However, I may say that it was an exceedingly pleasant variety in our proceedings to have contributions from the higher art—medicine—coming in with so much surgery as we generally have, and I am sure that if we judge papers by their scientific value,

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those by the President and Dr. Etheridge are worthy of the highest consideration.

First of all, I am perfectly well aware that renal insufficiency plays an exceedingly important part in gynecology, not alone from the medical standpoint, but in its bearing upon surgical cases. I think that I am right in believing that the glare of the footlights of the operating theatre has sometimes obscured the general condition of the subjects operated upon, and errors in preparatory and after-treatment have been committed, and hence results that could not, or were not accounted for, have followed. Knowing that we have been clean in our surgery, and exercising our usual dexterity, we expect everything favorable, and yet patients sometimes do badly, and I am sure that it is often due to overlooking the general condition; and especially the condition of the renal function and nervous system. I believe also that many affections of the pelvic organs have their genesis in functional derangements of the nutritive and nervous systems. We get a derangement of nutrition involving very largely a renal insufficiency, and that leads to malnutrition, which will develop a functional derangement of the uterus or of the ovaries, and before we know it, if we do not relieve this malnutrition, we have organic disease; in fact, I think it sometimes happens that we do not recognize the condition until we find it necessary to employ surgical treatment for the relief of the disease, which could have been relieved or prevented by proper medical treatment.

I am sure, too, that the condition of the kidneys has a very decided bearing upon the administration of the anæsthetic; but on that I need not dwell. I wish that the Doctor had dwelt a little more in detail upon the causes of renal insufficiency. I believe in a two-fold genesis—first, deranged innervation, and then renal insufficiency secondary to some local lesions. As an example of the first I may mention that ovarian, uterine or pelvic pain of any kind, and vesical disturbance will produce tardy action on the part of the kidneys—kidneys otherwise perfectly healthy—and if the deranged function is long continued organic changes will fellow. Under the second head is classed derangement of digestion and consequent malnutrition of various forms, leading to deranged function of the kidneys.

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In reference to treatment, there is much room for discussion. Of course if the condition is reflex because of some pelvic lesion, the treatment should be directed to the pelvic organs; if the renal insufficiency is due to indigestion and malnutrition, the management of these conditions first demands attention. The same is true when due to deranged innervation. I am not sure which has the greater influence—disturbance of the nervous system or derangement of the digestive organs. Renal insufficiency from both causes often occurs.

I am very much indebted to the author of the paper for dwelling upon the quantity of urea eliminated as the best evidence of the functional condition of the kidneys. I have so often found the presence of albumin and a few casts which amounted, after all, to nothing, as the patients promptly recovered, and it was not until I began to rely upon the quantity of urea eliminated that I got any correct idea of the real condition of the kidneys. I think that is a very important point. Our ordinary examinations for albumin, casts, etc., is really of minor value, because many times in functional disturbance without any organic disease all of these products are found, whereas the presence of a lessened quantity of urea is always evidence of something more than mere functional disturbance.

I would like to say how highly I appreciate some points in the President's address—not to discuss, but merely to express appreciation—and I believe that he brought out clearly and with effect the fact that there are two forms of malnutrition to deal with, or, rather, that there are two classes of cases, the neurasthenic and the lithæmic. The latter used to be considered due to faulty disintegration and elimination, which is indicated always by symptoms of oppression rather than of depression. The neurasthenic are depressed; the lithæmic, or those suffering from excrementitious plethora, are oppressed, and the differential diagnosis can be made without the slightest difficulty. No doubt patients can be guarded from uterine or pelvic disease by overcoming the lithæmia before the pelvic organs become involved. I wish that Dr. Etheridge had said more about the causes of those conditions. I shall refer to only one cause of this lithæmia, and that is the rest and forced feeding which is often employed, and is appro-

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priate in cases of neurasthenia, but which, when inappropriately used or too long continued, very often leads to this lithæmia. I am sure that a great many blunders have been made notwithstanding the intrinsic value of this system of feeding. By directing forced feeding where there was lithæmia, or where the system was loaded down with excrementitious material which should be eliminated, I am sure much harm has been done. The point seems to be overlooked that tissue developed by rest and forced feeding is about the same tissue as that developed in Strassburg geese when they undergo forced feeding.

There was a whole volume in the dress reform which the President referred to, and I am glad he sees that there is room for improvement in teaching women how to put on their fineries. The fact is, the emancipated woman was spoken of some time ago as the "coming woman," and now that she has come she is called the "new woman," yet she has brought with her some of her old errors. In her ways she has been rather tending toward the masculine type, and there is no unkindness in saying that although there may be no great improvement, if any, the new woman (notwithstanding the compliment which she has received from our President), we hope, will still continue to be a little of the old girl.

Dr. Howard A. Kelly, of Baltimore.—Judging by the title of this paper I had prepared to speak in a somewhat different direction from that taken by the author, and if I may I shall speak of the relation of renal insufficiency to gynecological operations, as a corollary to the paper presented by Dr. Etheridge.

I have made a number of analyses of groups of cases, all of which tally quite closely, so that the last group of twenty-one cases, taken as they came, is a fair average of all. The amount of urine excreted daily before the operation was carefully measured, and again after the operation until the secretion returned to the normal amount.

In fifty-five observations on twenty-one cases the average amount of urine passed before operation was 1027 c.cm., varying between 847 and 1270 c.cm., the lowest and the highest. After operation the average was 354 c.cm. for the second day, the lowest being 200 cc.m. and the highest 590 c.cm.; on the

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third day it wass 450 c.cm., on the fourth 466 cc.m., and 538 c.cm. on the fifth.

So you see I have answered one most important question. There is always an anxiety following operation as to whether the kidneys are seriously impaired and a nephritis has developed, or an existing nephritis of low grade has become aggravated, and the patient may be in danger of dying of a renal complication. We see, however, in all these cases that the urine *naturally* drops down to one-third or one-half the normal amount after operation, and for a number of days keeps about on that level. With the diminished excretion of urine there is an increase of solids. It is a very concentrated urine, and it forms a layer of sediment if allowed to stand. It meets any inquiry which may arise in the mind of the operator as to whether he has tied the ureter or not, for without this knowledge he might think that this accident had occurred owing to the reduction of the amount of urine. The cause of the diminished secretion of urine seems to be that the patient is given less water than usual in order to avoid vomiting after the ether. Further, Dr. Clark has suggested that a large amount of the fluids escape with the ether in exhalation. The specific gravity of the urine after operation is 1.025, or even 1.040, and continues at that figure as long as the quantity is diminished.

Dr. Willis E. Ford, of Utica.—I have been led to suppose that these variations in the quantity of the urinary secretion are due to emotional disturbance as much as to anything else—excluding, of course, troubles of digestion. But if you will take a number of cases of neurasthenia in young men you will find pretty much the same thing as in women—diminished urinary secretion. Take men or women, you will find the secretions diminished in almost all instances when the emotions are disturbed, so that I would not like to have it assumed that these disturbances were wholly due to the uterine condition. I have always thought that this falling off in the quantity of the urine after cœliotomy was due, in the first place, to the emotional condition preceding the operation, which resulted in a flushing out of the kidneys, so that there was no necessity for a free secretion afterward. Compared with her emotional state preceding the operation, the patient is in a rather flaccid condition afterward.

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Dr. J. M. Baldy, of Philadelphia.—I am more than glad to have Dr. Ford call attention to a point which has frequently been presented to my mind. I believe quite the contrary to Dr. Skene, who says that these patients suffer from gynecological diseases because of renal insufficiency, due to a neurosis. I think that their renal insufficiency and their neurotic condition are due to their gynecological lesions. There is no question that very many of these patients are neurasthenic from their long-standing pelvic troubles; and, again, there is little question that we can, in a large proportion of cases, readily trace the cause of the neurosis, and show that the patients had not been originally neurasthenic when the gynecological lesion occurs. The same may be said concerning the renal insufficiency.

Dr. W. Gill Wylie, of New York.—I rise not to discuss the paper, but to state that it has been very instructive to me. There is also one practical point to which I would allude. I had for many years noticed the facts which have been so plainly demonstrated scientifically by Dr. Kelly, and the way in which my anxiety came to be relieved was as follows: I found that the administration of hot saline solutions by the rectum was a good thing, not only after an operation, but also during its performance; it prevented shock. I noticed that the amount of urine was less when there was greater shock and when there was greater loss of blood. I have followed up that observation practically, and it has been for some years a habit of mine to satisfy the patient's thirst, to improve the circulation, and to relieve to a considerable degree the change in the urinary secretion by giving rectal injections. It relieves the intense thirst and restlessness especially in a wonderful way. It does not disturb the stomach in the least except in cases where there happens to be rectal irritation. I am satisfied that the adoption of this method would prevent what we sometimes call secondary shock. It makes up for loss of blood which occurs during the operation. Then, instead of keeping the intestine too quiet after the operation, I believe that this rectal enema will prevent the formation of adhesions.

Dr. Bache McE. Emmet, of New York.—I wish to say only one word, while expressing my appreciation of the paper and its great value, to ask attention to the importance of preventing

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the suffering which results from the accumulation of urea. It is common to admit patients to the hospital only shortly before the operation, which renders preparatory measures impossible. I have no doubt that if we would admit our patients two or three weeks in advance of the operation, and give attention to the intestinal and urinary tracts, we could put them in a condition which would prevent the occurrence of intestinal paresis and urinary troubles. I think that this is a practical point which, if we regard it more, would give us better results even in minor cases.

DR. A. LAPTHORN SMITH, of Montreal.—We do not, as a rule, teach our gynecological patients to drink enough water. I believe that half of the pains and aches of women who come to us are due to the deposits of uric acid in the joints and muscles, especially in the muscles of the back. I used to suffer agony myself on the day of my operations and afterward, and I found that my urine would diminish in quantity the same as the patient's, until I began to drink a large quantity of water to make up for what I had lost by perspiration, and I found that I could thus get rid of my pains in two or three hours, or even in one hour; so I have been giving patients rectal injections of water when they could not retain it by the stomach, and they are just as well off now as I am. I think that a great deal of suffering is caused by want of water to wash out the blood. Many women tell us that they never drink a glass of water in their lives. Men take a drink two or three times a day between meals, and they do not suffer from these aches and pains as much as women.

DR. ETHERIDGE, in closing the discussion, said: I am loath to take up more time because of the great importance of the papers which are to follow. I wish to add just one remark. It is this, that I purposely avoided the enumeration of medicines in the treatment, taking it for granted that each man here knew what was best from his own experience.

Concerning the preparation of the patient, as a rule, I collect the urine for twenty-four hours, and if I find that she is passing fifty per cent. less than she ought, I postpone the operation for several days, until it is brought up to the proper amount. If her system is not saturated with uric acid the wound will heal more readily.



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# INDICATIONS FOR TOTAL CASTRATION BY THE VAGINA.

By Charles Jacobs, M.D.,
*Brussels.*

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Before everything else, allow me to express to you the sentiments of gratitude which I feel for the kind invitation which you have sent me to assist at your meeting, as well as for the sympathetic and hearty manner in which you have welcomed me among you.

The circumstances which have brought me here, the honor of speaking among you, your kind greeting—all, in fact, contribute to my never forgetting the date of this meeting.

I wish to place before you the principles which I have so often supported in Europe, viz., the indications for hysterectomy by the vagina. I do not intend to retrace the history of the above operation, to point out the numerous processes, to recall to your memory the opinions for or against, nor the struggles fought out. That would be going over facts, which will remain graven in the history of modern surgery. My programme is more modest.

I wish to submit to your judgment, so as to try and gain your convictions, the results of my own personal practice—what I have done, how and why I have done so, the good and bad results that I have obtained. I wish to do that without passion or personal attack. And if I cause a few among you to be convinced, I shall consider myself happy, for I shall have accomplished a useful and beneficent task.

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As a general rule, it may now be said that vaginal hysterectomy finds its indications in

1. Uterine cancer.
2. Fibroids of the uterus.
3. Extra-uterine pregnancy.
4. Total genital prolapse.
5. The inflammatory diseases of the appendages.
6. The chronic and incurable diseases of the appendages and of the uterus.
7. The diseases of the uterus after abdominal operation.

From 1899 up to the 1st of April, 1895, I have performed 403 operations of this kind. I have obtained 391 operative cures with 12 deaths, which makes the death-rate 2.9 per cent.

DETAILS OF THE BEFORE-MENTIONED OPERATIONS

| Indications. | Cases. | Cured. | Deaths. |
|---|---|---|---|
| A. *Uterine cancer:* | | | |
| Epithelioma colli | 35 | 34 | 1 |
| Epithelioma corporis | 3 | 3 | |
| Sarcoma | 2 | 2 | |
| Adenoma malignum | 5 | 5 | |
| B. *Uterine fibroid:* | | | |
| Simple vaginal hysterectomy | 23 | 23 | |
| Hysterectomy by morcellation | 15 | 13 | 2 |
| C. *Extra-uterine pregnancy* | 3 | 3 | |
| D. *Total genital prolapse* | 19 | 18 | 1 |
| E. *Bilateral diseases of appendages:* | | | |
| Pyosalpinx | 142 | 139 | 3 |
| Abscess of the ovaries | 15 | 15 | |
| Hematosalpinx | 33 | 33 | |
| Chronic parenchymatous salpingo-oöphoritis, without adjacent or uterine complications | 82 | 79 | 3 |
| F. *Chronic and incurable diseases of uterus or appendages:* | | | |
| Tuberculosis | 6 | 5 | 1 |
| Pelvic neuralgia | 6 | 5 | 1 |
| Secondary hysterectomy after abdominal operation | 14 | 14 | |
| | 403 | 391 | 12 |

The great extent of the subject prevents me from entering into full particulars. I also wish to avoid in the discussion

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all arguments the force of which is at present known—the abdominal cicatrix after cœliotomy, the dangers subsequent to abdominal operations, resulting from leaving in the pelvis a diseased uterus, etc. I shall also pass over in silence medical treatment and other operations directed against the same disease, such as vaginal puncture, vaginal incision, vaginal cœliotomy, etc.

Let us quickly review the operative indications in the different cases.

A. Uterine Cancer. Vaginal hysterectomy has very clear indications. To practice the operation with success, we must find:

1. Integrity of the vaginal *cul-de-sac*.
2. Complete mobility of the uterus.
3. A satisfactory general state of health.

But the invasion of the vagina, the intense pain which indicates involvement of the broad ligaments and periuterine adhesions, absolutely contraindicate it.

Can we conscientiously advise uterine extirpation in cancer? Is not that a useless operation?

In the present state of science, I consider that extirpation should always be attempted under the above-mentioned conditions. If it is true that recurrence is almost unavoidable, at least we may procure for our patients the chance of survival for a time, greater or less, which other operations do not afford.

In 45 cases in which I have operated I have had 1 death, being 2.3 per cent. I have lost sight of 9 patients and have 33 under observation.

| | | |
|---|---|---|
| Recurrence . . | Before 1 year . . . . | 4 |
| | After 1 " . . . . | 3 |
| | After 2 years . . . . | 5 |
| | After 3 " . . . . | 13 |
| | After 4 " . . . . | 4 |
| | After 5 " . . . . | 1 |

I have actually at present 5 patients free from recurrence who were operated upon more than four years ago.

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As will be seen, the most numerous cases of recurrence have occurred only after three years. It seems therefore that it is to the patients' interest for them to undergo an operation the dangers of which are slight and which can give them comparatively good health for a period much longer than that afforded by any other operation or palliative treatment.

The extent of the subject which I wish to discuss before you obliges me to be brief; I shall therefore pass on to

B. Uterine Fibroids. I consider, from my experience, that it is exceptional for a uterine fibroid to disappear after the menopause. We often see after the critical age these tumors show their presence by manifold symptoms—metrorrhagia, increase in volume, or different forms of degeneration occur. The artificial menopause brought about by bilateral castration, being able to give, according to actual facts admitted, only uncertain results, and on the other hand the medical palliative treatment almost always giving bad results, our duty is to advise the ablation of the fibrous tumors. The operation being less dangerous according to the smallness of the tumor, I always advise it as soon as possible, preferably vaginal hysterectomy, before the tumors have acquired sufficient size to oblige us to interfere by way of the abdomen.

I shall not speak to you of the abdominal operations which apply to large fibrous tumors.

I have practised 38 vaginal operations of this character, viz.: 23 simple hysterectomies with 23 cures; 15 hysterectomies by morcellation with 13 cures and 2 deaths. These two deaths were due to exhaustion of the patients and cardiac disease.

In 5 cases there existed at the same time purulent or bloody tubal collections.

C. Extra-uterine Pregnancy. When all the subjective and objective symptoms permit us to make the diagnosis of extrauterine pregnancy, or of tubal abortion, our

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duty is to interfere surgically. The majority of cases observed up to the present time tend to prove that in the case of extra-uterine pregnancy the appendages are always diseased on both sides; their ablation is therefore absolutely necessary. I consider that in such cases total castration by the vagina fulfils all indications.

This intervention should be made as soon as possible, because of the numerous lesions of the uterus and appendages, as well as the peri-uterine diseases, which are unavoidably occasioned by extra-uterine pregnancy.

I have operated upon 3 cases of the sort with 3 positive cures. In the 3 cases the extra-uterine pregnancy was accompanied by intra-abdominal hæmatocele.

D. Total Genital Prolapse. The different ways of treating total genital prolapse give results so little encouraging that in certain cases one may advise the extirpation of the uterus. Such cases are rare. We shall only adopt it in the case of aged women whose uteri have become useless organs, but which, by reason of that infirmity, have become the seat of constant pain. I do not advise hysterectomy when the uterus is small, for then plastic vaginal operations give very good results.

The uterus with thick walls, with swollen cervix surrounded by relaxed tissues, renders doubtful the success of plastic work. Sterility, the failure of prior operations—such are the conditions which require radical extirpation.

There almost always exists after the cure more or less vaginal prolapse; for that reason I am in the habit of completing the treatment by performing plastic operations on the vagina and perineum a few weeks after. I have operated upon 19 cases of this kind, with 18 cures and 1 death, due to subsequent intestinal paralysis.

In 12 of these cases I practised four or five weeks after the hysterectomy plastic vaginal operations. Excepting in 3 cases, where there still persists a certain degree of prolapse of the anterior vaginal wall, I have observed complete cure.

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E. Bilateral Diseases of Appendages. Two hundred and seventy-two cases of diseased appendages, with 6 deaths—such is my experience; 142 cases of pyosalpinx; 15 cases of abscess of the ovaries; 33 cases of hæmatosalpinx; 82 cases of chronic ovaro-salpingitis.

Three of the deaths were in cases of pyosalpinx, 3 in those of chronic ovaro-salpingitis; the first 3 cases in exhausted patients, the 3 others in women near their critical age, or who had passed the climacteric, and whose deaths I attribute to the nervous shock arising from the operation. I have therefore observed 266 cures. I have been able to see again about three-fourths of these patients many months after their operations. I have shown them to my students and to my colleagues. I have proved undeniably their definite and radical cures to have remained absolutely the same as they were soon after the operations. To all, or mostly all, health has entirely returned, and I can assert that not one of the aforesaid patients has been obliged to again have recourse to me since the operation.

There is one danger in hysterectomy of which I shall speak, that is, subsequent fistulæ.

They may be classed as follows:

1. Peritoneal fistulæ.
2. Vesical fistulæ.
3. Ureteral fistulæ.
4. Intestinal fistulæ.

In the 403 cases of hysterectomy I have observed 9 fistulæ after the operation, which convinces me that however complicated may be the operation subsequent fistula is exceedingly rare.

I have observed five intestinal, three vesical, and one ureteral fistula.

*Intestinal Fistulæ.* In most of the cases these fistulæ existed prior to the operation, that is to say, they were fistulous passages which extended between the purulent foci and some part of the intestine. These passages were so large,

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and with walls so well organized, that the disappearance of the purulent pockets did not suffice to bring about the subsequent and spontaneous cure.

The first case I observed was of this kind. It was in a person suffering from a long-standing pelvic suppuration, with a communication with the intestine. The fistulous passages, for there were several of them, gave, after the hysterectomy, issue to fecal matter, by way of the vagina. I tried to cure this infirmity by plastic vaginal operations, but in vain. About a year after the operation the patient died from intestinal tuberculosis.

In the second case, an intestinal fistula took place during the operation by the rupture of adhesions. I observed a spontaneous cure after a few days.

The third intestinal fistula appeared a year after hysterectomy by morcellation in a case of uterine fibroid. A pad had been left in Douglas's pouch up to that time; after having caused a small local abscess it issued by the vaginal wound. There persisted a small intestinal fistula, which I succeeded in curing by means of a plastic operation.

In the fourth case of intestino-vaginal fistula I was obliged to make use of the Murphy button. It was in a case of very serious pelvic suppuration, with intestinal communication. The adhesions of the appendages were so solid that I could not complete their extirpation. A large fistula persisted, connecting the vagina with the upper part of the sigmoid flexure. I allowed the patient to gain strength, and three months after the operation I performed cœliotomy. I easily detached the gut from its adhesions, and found a very large and tortuous fistula. I attempted to suture by means of catgut, in separate stitches, but the passage of the intestine absolutely closing, I was obliged to perform intestinal resection. I cut away about eight or ten centimetres of the intestine, and rapidly applied Murphy's button. Seventeen days after the button was evacuated by the patient. Yet,

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after the tenth day normal defecation re-established itself, and the patient is now absolutely cured.

The last case of intestino-vaginal fistula is quite recent. It was in a case of tuberculous disease of the appendages, with strong intestinal adhesions. The detaching of these brought about an entire rent of the intestinal coats. Four days after fecal matter issued by way of the vagina. Three weeks for the operation I performed cœliotomy. The search for the fistula was easy; in this case again, by reason of the extent of the wound, I resected a few centimetres of the intestine and introduced Murphy's button. This patient died. Peritonitis developed after the escape of the button. I attempted, without result, a second cœliotomy with a fresh application of Murphy's button.

*Vesical and Ureteral Fistulæ*—This results from wounding of the bladder or ureter in consequence of pelvic lesions. This occurred in a case of serious pelvic suppuration, in which I was obliged to leave a part of the appendages in the pelvis.

Some time after the operation, the patient complained of being constantly wet. Micturition took place in a natural way. Vesical injections allowed no liquid to issue by the vagina. At the bottom of this passage there was to be seen a small orifice, by means of which the urine issued drop by drop. It was a ureteral fistula. I catheterized the ureters and was easily able to ascertain the integrity of the right ureter, which showed me that the wounded ureter was the left one.

I performed a cœliotomy with the intention of curing this infirmity, by the suture of the renal end of the ureter to the bladder. But notwithstanding the most prolonged search, I could not find the left ureter. I then performed nephrectomy. The patient is cured.

I have established in these three cases of cœliotomy, consecutive to very difficult total vaginal castrations, a proof of the greatest importance. In the three cases, the visceral

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adhesions, which, at the time of the operation, were such that the total ablation of the appendages was, if not impossible, at least very laborious, had almost disappeared, and in the three cases I easily reached the wounded intestines, which were at the bottom of the pelvis. The hopes put forth, respecting the later consequences of total vaginal castration in pelvic suppurations, seem to be supported by these examples.

Let us compare with the above the 33 cases of intestinal fistulæ after ablation of the appendages by way of the abdomen, spoken of by Dudley, in the *American Journal of Obstetrics* of 1892.

Another danger, which I shall also avoid in the discussion, is that of hemorrhage. The security of the hæmostasis evidently depends upon the instruments, but would one dare to undertake a serious operation with imperfect instruments? No! I have seen only one case of serious hemorrhage after the removal of the instruments, but not a fatal one. I must add that it was in a hæmophilic patient. Secondary hemorrhage is therefore a bugbear which will only stop the timid.

It has been said as a reproach to total castration by the vagina that danger might exist in complicated cases through leaving in the abdomen the remains of suppurating foci. There are certainly cases of suppuration, wherein the fusion of the pockets with the neighboring organs is such that complete ablation is impossible. In the 157 cases of serious suppuration upon which I have operated I have in twenty-one cases left parts of the appendages in the pelvis, and I have never been obliged to have recourse to a supplementary operation by reason of subsequent complications. Besides is not that what happens in cœliotomies for very adherent purulent diseases of the appendages? Lawson Tait, Pozzi, Fenger—would they not have advised the opening of the pockets, their cleaning and drainage? Have they not observed definite cures?

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It is at least remarkable that it is precisely in these serious cases that vaginal castration has given its greatest successes, which have gained for it the adherence of avowed cœliotomists, such as Pozzi, Terrier, Sänger, and others. If a few operators have been obliged to have recourse to supplementary operations after vaginal hysterectomy, how many times have they not been obliged to resort to secondary hysterectomy after a failure following cœliotomy?

So far as I am concerned, I have performed 14 hysterectomies of this kind, 5 times after abdominal sections done by me, and which have remained incomplete when looked at in a therapeutic light, 9 times after cœliotomies performed by Belgian or French colleagues. I have obtained 14 definite cures. If we admit that all diseases of the appendages which place woman's life in danger, or which render her life miserable in consequence of constant pains and continual invalidism necessitate surgical intervention, viz., the ablation of the diseased organs, we shall absolutely put aside all discussion as regards the abuse of operations. I wrote, however, on that subject a few months ago in the *American Journal of Obstetrics.*

Then let us now examine, before going into the definite particulars of vaginal castration for disease of the appendages, as to the importance of the operation compared with that of the cœliotomy.

I do not wish to go far into this question, the mathematical expression of operative mortality being always relative. If we take into consideration the French cœliotomists of incontestable renown, such as Terrier and Pozzi, in the cases of suppurated diseases of appendages they obtain 6 and 8 per cent. of deaths in 96 and 99 cases.

My own statistics give, in 157 cases, 3 deaths, that is to say, 1.9 per cent.; Leopold, in 14 cases, no death; Péan, in 350 cases, 7 deaths, 2 per cent.; Richelot, in 56 cases, 5 deaths, 8.9 per cent.; Ségond, in 114 cases, 13 deaths, 11.2 per cent.; Doyen, in 125 cases, 8 deaths, 6.4 per cent.; so

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we find in 816 cases 36 deaths, that is to say, 4.5 per cent.

Therefore in cases of suppurative diseases of the appendages the operation of Péan victoriously supports a comparison with cœliotomy; it is incontestable that the former is much superior.

In cases of non-suppurative disease Ségond in 82 cases had no deaths; in 115 cases, I have had 3 deaths; Péan, in 100 cases, 2 deaths; Leopold, in 30 cases, 1 death; Sänger, in 17 cases, 2 deaths; Richelot, in 40 cases, 2 deaths; making a total of 584 cases, with 10 deaths, or 1.7 per cent.

Cœliotomy in these cases also gives brilliant results. One may even say that its dangers are very slight. Thus in 461 cases, operated upon by Pozzi, Terrier, and Schauta, there has been a mortality of 3.6 per cent. I have therefore the right to conclude that the operation of Péan is less dangerous than cœliotomy in cases of suppurative disease of the appendages; it gives as good results in cases of nonsuppurative lesions.

If the experience and the careful examination of our patients during several months after operation give us the conviction that the subsequent results are much more brilliant after vaginal hysterectomy than after cœliotomy, we shall remain convinced that total castration by the vagina is certainly the preferable operation in cases of bilateral disease of the appendages; it is less dangerous and gives more perfect cures.

*Indications for Total Vaginal Castration in Diseases of the Appendages.* The indications for hysterectomy are the same as those for bilateral ablation of the appendages by cœliotomy. The bilaterality of the lesions, the uselessness of palliative measures alone, make legitimate our intervention by way of the vagina. The diagnosis is of great value, but it is not necessary to make a bugbear of it. For if, since our efforts to popularize the vaginal method, the diagnosis has suddenly become difficult, it is at least

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singular to find that it is precisely those who found the diagnosis so easy when justifying the abdominal route, who pretend to-day that it is full of difficulties by the former method.

It is incontestable that one can always make the diagnosis whether the appendages are diseased or not, with or without anæsthesia.

What does it signify whether the tubes contain pus or blood—whether these collections are in the ovary or in the tubes? We must have before us the idea of perfecting a diagnosis as much as possible; but these points are secondary as regards our intervention. Besides, at the first step of intervention by the vagina, which should always be the opening of the Pouch of Douglas, the real exploring point, the surgeon must always practice exploration by that route, although he may have to confine his operation to a simple elytrotomy, should such be necessary. This is in doubtful cases.

When the diagnosis is certain, the exploration is superfluous, but it always constitutes an argument sufficiently strong for vaginal castration to be no longer an operation which unavoidably causes the ablation of the uterus as soon as it is attacked.

Finally bilateral lesions require total vaginal castration. Those lesions are suppurative or non-suppurative.

1. *Suppurative Lesions.* When the pockets are very adherent according to the opinion of all surgeons of to-day, vaginal hysterectomy is the operation that should be chosen. If the pockets are free, then the operation of Péan is superior to cœliotomy, for it permits an easy drainage, it is more complete, and never leaves any cicatrix. For my part I never hesitate.

If the adhesions of the lesions do not permit the complete ablation, we have seen that we should be wrong in fearing the possible reappearance of inflammation of the remains left in the pelvis. In all cases wherein I have been

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obliged to act thus I have never seen subsequent complications.

It is not the same with abdominal operations.

2. *Non-suppurative Lesions.* They comprise: 1. Non-suppurative salpingitis. 2. Parenchymatous salpingitis. 3. The catarrhal salpingitis. 4. Degeneration of the ovary.

When the lesions are bilateral they require the complete ablation of the appendages. All agree upon this point.

In these cases vaginal castration is as benign as is cœliotomy, and it is more complete, the total ablation being the rule. In all cases the cure may be called radical by our operation, whereas cœliotomy leaves the woman exposed to uterine diseases, to persistent pelvic pains, on a level with the pedicles, and to nervous disorders.

F. I arrive at my last category, viz.,

CHRONIC AND INCURABLE DISEASES, and among them pelvic neuralgiæ, and tuberculosis. All those who have practised cœliotomy a great deal know the very little encouraging results that may be expected from bilateral castration in serious pelvic neuralgiæ, in cases in which the most attentive examination does not succeed in discovering very clearly the lesions.

It is established to-day that the results acquired by the operation of Péan in these cases give more brilliant results than does cœliotomy.

Out of the six cases of the sort upon which I have operated I have five times seen a radical cure follow and remain two, three, and four years after the operation, with women whose nervous systems were so shaken that they became morphinomaniacs. Two of the above patients, hysterical persons, have had their attacks completely disappear. With the sixth person the therapeutic result is too recent to be affirmed.

Lastly, I have applied total vaginal castration in six cases of congenital tuberculosis. I have obtained five cures and one death. Four of the patients cured by the operation enjoy very good health; with the fifth patient pulmonary disease

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has set in since the operation. The number of these cases is too limited to admit precise conclusions. However, the results that I have obtained are most encouraging and will guide me in cases of this kind, more toward vaginal castration than toward cœliotomy.

I shall not enter into the details of the operation; that would carry me too far. Besides, they have been given to those among you who have had occasion to see applied the operation of Péan in Europe.

Permit me in finishing to submit to you the following conclusions:

A. 1. Total castration by the vagina is indicated in uterine cancer at its beginning. 2. In uterine fibroid. 3. In extra-uterine pregnancy and tubal abortion. 4. In complete genital prolapse, according to the indications which I have laid before you.

B. It is the best operation in bilateral purulent or non-purulent diseases of the appendages.

C. It finds its indications in uterine and in chronic incurable diseases of the uterus and its appendages.

D. Complete vaginal castration is not a more dangerous operation than is cœliotomy.[1]

[1] The most recent statistics (unpublished): Landau, 141 cases, 2 deaths; Léopold, 44 cases, 1 death; Sænger, 17 cases, 2 deaths; Péan, 450 cases, 12 deaths; Richelot, 219 cases, 11 deaths; Doyen, 253 cases, 18 deaths; Ségmond, 200 cases, 14 deaths; Gallet, 29 cases, 2 deaths; Jacobs, 408 cases, 12 deaths. Total, 1756 cases, 74 deaths; 4.2 per cent. mortality.

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# VAGINAL HYSTERECTOMY FOR UTERINE MYOMATA AND DISEASES OF THE ADNEXA.

By William H. Wathen, M.D.,
*Louisville, Ky.*

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To Péan is mainly due the credit of demonstrating the indications for and the success of vaginal hysterectomy in the treatment of tumors of the uterus and the uterine adnexa, and other diseased conditions in the pelvic cavity; and as his experience is greater than the experience of any one else, the following extract from a letter received from him may be of interest:

"Since 1882 I have shown, as you will see, that the vaginal method is preferable to the abdominal for all small tumors of the uterus and adnexa; that vaginal hysterectomy is preferable in operating for cystic or solid tumors of the uterus and its adnexa, the size of which does not exceed the fœtal head and which do not extend above the umbilicus; that by this new method we may remove without danger (two to four per cent.) the uterus for fibroma, sarcoma, cysts, or cancer, with the greatest facility, if one employs my method of using preventive clamping forceps and morcellation of the tumors and diseased organs. By this new method an experienced surgeon may avoid lesions of the adjacent organs, even if there are grave complications, general adhesions, pelvic suppuration, etc."

From a more recent letter from Péan, Paris, May 3, 1895, giving the statistics of his vaginal hysterectomies and the con-

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ditions for which the operations were performed, I quote the following: "The operations were performed approximately in 10 per cent. of cases for myomata, in 20 per cent. of cases for simple inflammation of the uterine adnexa, in 30 per cent. of cases for simple pelvic suppuration, in 40 per cent. of cases for complicated pelvic suppuration and intraligamentous cysts and myomata. The mortality in all these operations is about 3 per cent."

The following is an extract from a letter from Richelot, Paris, May 7, 1895:

"In my book[1] were reported 230 observations concerning facts that interest you. Of this number there are 43 uterine myomata with one death; 61 pelvic suppurations with five deaths; 126 non-suppurative diseases (hematosalpinx, parenchymatous salpingo-ovaritis, hydrosalpinx, etc.) with five deaths, which gives a mortality of 4.78 per cent.

"Since the end of the year 1893, at which time the statistics in my book cease, I have made in the space of one and a half years 154 operations for diseases not cancerous. Here are the results: 22 uterine myomata with one death, 78 non-suppurative diseases with one death, 54 pelvic suppurations with 3 deaths, which gives a mortality of 3.68 per cent.

"In uniting the two series I find 384 cases with 16 deaths, which gives a general mortality of 4.16 per cent.

"It is to be remarked that the results of the second series are superior to those of the first, though the proportion of causes of pelvic suppuration is much greater.

"It is also to be remarked that the six deaths of the second series occurred in the first five months, and that I have had since the month of June, 1894, nearly a year ago, an uninterrupted series of 112 recoveries, of which I count 36 suppurations nearly all complex, and 19 fibroids nearly all large and extracted by laborious morcellation.

"These results confirm the opinion that I have already ex-

[1] L'Hystérectomie vaginal contre le Cancer de l'Utérus et les Affections non-cancereuses." Paris: O. Doin, éditeur.



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pressed in my book on vaginal hysterectomy. I prefer this operation to laparotomy in:

"1. Uterine myomata when the tumor can be taken away per vaginam by morcellation; that is to say, for all tumors that do not ascend above the umbilicus and are of sufficient consistence to give firm hold to the instruments per vaginam.

"2. Diseases of the adnexa when the lesion is certainly bilateral; when the age of the woman permits the surgeon to think exclusively of the assurance of the operative result and the perfection of the therapeutic result. I reserve laparotomy for cases where a woman is young, if the bilateral lesions are not shown."

The following are the conclusions in a letter from Pozzi, Paris, May 11, 1895, based upon his experience in vaginal hysterectomy for the last five years:

"I only prefer vaginal hysterectomy for pelvic inflammations when laparotomy would be too dangerous or insufficient to insure a complete recovery. So I perform vaginal hysterectomy every time I find bilateral lesions of the appendages with firm adhesions to the uterus. I also perform vaginal hysterectomy when I meet with double pyosalpinx adherent to the fixed uterus or with periuterine inflammation. As for my myomata, some of them were very large and extended up to the umbilicus, and in some cases there were periuterine inflammation and adhesions.

"My rule is to perform vaginal hysterectomy in myomata when they do not extend beyond the umbilicus."

Probably no one has had better opportunities than Jacobs to compare the results by vaginal hysterectomy and cœliotomy in the treatment of pelvic suppuration and bilateral diseases of the uterine adnexa. In a paper published in the May number of the *American Journal of Obstetrics and Diseases of Women* he gives the following indications for vaginal hysterectomy:

"Hysterectomy and ablation of the adnexa by the vagina are indicated in cases of cancer of the uterus, uterine tumors,

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diseased conditions of the uterine appendages, periuterine suppurations, suppuration about the appendages, and for periuterine tumors."

To these indications I would add some cases of extrauterine pregnancy, postpuerperal septicæmia where the infection is confined to the uterus or pelvic structures, and small ovarian tumors. Jacobs's mortality in four hundred and three vaginal hysterectomies for the above-named conditions is 2.9 per cent.

It will not be contended that vaginal hysterectomy should be an operation of election in all cases of pus-pockets in the broad ligaments, tubes, ovaries, or cavities formed by adhesions (encysted peritonitis), for there may be complications involving structures so high above the pelvis that they cannot be reached per vaginam, and without the removal of which the patient cannot be cured—namely, extensive omental or intestinal adhesions and appendicitis. These complications, however, are so infrequent that practically all cases are operable per vaginam.

As hysterectomy should not, with few exceptions, be performed if the ovary and tube upon one side are healthy, it may be urged that where we cannot positively diagnosticate bilateral diseases of the adnexa the diseased structures should not be approached through the vagina.

This objection is not valid, because an opening into Douglas's pouch is devoid of danger, and the diseased side may be removed through such opening without disturbing the uterus, and if it cannot a cœliotomy may be immediately performed, and if necessary the vaginal opening left to give more perfect drainage. In some cases of cœliotomy where a pus-sac cannot be enucleated without rupture a previous opening into the vagina would lessen the mortality, because the pus by gravitation would go in that direction, and by irrigation from above might be immediately forced into and out of the vagina without soiling the peritoneum or necessitating the use of abdominal drainage by the glass tube or gauze.

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The dangers of immediate and secondary hemorrhage, wounding the bladder, ureters, or intestines, and the difficulty of maintaining asepsis are arguments used against vaginal hysterectomy; but these objections are not well founded, and the experience of Péan, Richelot, Ségond, Jacobs, etc., has proved that these dangers are less than in cœliotomy.

Where it is the correct thing to attempt to separate the adhesions of the intestines or omentum, this may be done about as well through the vagina as through the abdomen; but where adhesions are firm and extensive, shutting off pus-cavities from the abdomen, it is often the wise thing to disturb the intestines as little as possible, for they are so arranged that they may cause no subsequent trouble, allowing the gas and feces to pass uninterruptedly. But if cœliotomy is performed these adhesions must be separated, the peritoneal cavity thereby soiled, probably causing local if not general sepsis, and if the intestines have escaped serious injury they are left in a condition that predisposes to secondary irregular adhesions more dangerous than the primary adhesions. All experienced cœliotomists know that in secondary operations in such cases the adhesions are often almost universal and may cause death from obstruction. While the dangers of wounding the rectum, bladder, or ureters in vaginal hysterectomy are not greater than in cœliotomy, if these structures are injured the mortality in the former is not twenty-five per cent. of the mortality in the latter, because the perfect drainage prevents peritoneal infection. The bladder or rectum may often be immediately sutured, and if the ureter is injured and cannot be repaired it may be subsequently implanted in the bladder.

If the wounds of the rectum and bladder cannot be repaired the openings generally close within a few weeks. The indications for vaginal hysterectomy, and the superiority of this method over the abdominal method in the treatment of cancer, of small myomata confined to the uterus or extending into

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the broad ligaments, or in small bilateral intraligamentous cysts, are so manifest and have been demonstrated so positively by the work of Péan and his followers that a further discussion would be a waste of time.

Nor is it necessary to argue with cœliotomists who contend that the removal of the uterus after the tubes and ovaries have become badly diseased and are functionless is a useless mutilation. When the tubes and ovaries are removed the uterus can serve no useful purpose, and may remain, or finally become an offending member of the body. In many cases where the tubes and ovaries are removed the woman is not cured and may not be benefited, but when finally the uterus is removed all symptoms disappear.

As tubal or pelvic suppuration is frequently caused by extension of an infection in the endometrium, the uterus may remain a diseased organ that cannot be cured by curetting or other intrauterine treatment.

In other cases where the uterus shows no positive signs of disease the removal of the adnexa does not relieve pain, because the nerves of the uterus or the surrounding ganglia are diseased. If the uterus is not removed, even if not diseased, it may become reinfected by fresh exposure, or may become displaced and adherent to adjacent structures, or carcinoma may develop. As about 20 per cent. of all cases of salpingitis are tubercular, with probable tubercular involvement of the uterus, the latter organ in such cases should be removed with the tubes and ovaries.

Pus-tubes may have formed such extensive and firm adhesions that their removal entails such injury to the uterus that a mutilated organ is left. In most of Péan's cases, where the uterus was removed and the appendages drained and left, the patients remained permanently cured. Péan was at first alone in his advocacy of vaginal hysterectomy for the above-named conditions, but finally his own countrymen who had opposed him vigorously became the most earnest advocates of the new method.

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The following are some of the reasons why vaginal hysterectomy should be preferred to cœliotomy :

1. There is less shock and more rapid and complete convalescence, the patients usually sitting up within a week and walking a few days later.

2. In pelvic suppuration there is less danger of septic infection from soiling the peritoneum.

3. Absence of suture or mural abscesses, and of sinuses following the use of drainage or an infected ligature.

4. Fewer adhesions following operation.

5. Immunity from ventral hernia.

6. A lower mortality, fewer post-operative complications, and a more complete restoration to health in a relatively greater number of cases.

Fig. 1.

Retractors.

The above are facts, as shown by statistics of the most successful operators in cœliotomy and vaginal hysterectomy; and in vaginal hysterectomy many of the cases were inoperable by any other method.

It will thus be seen that theoretical objections to vaginal hysterectomy, unsupported by facts and reasons, are worthless when tested by intelligent experience.

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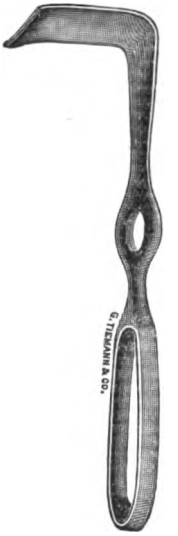
The preliminary preparations for vaginal hysterectomy and cœliotomy are nearly identical, but in the former the vagina should be made as aseptic as the abdomen is in the latter, and if there is infection of the endometrium, causing leucorrhœa, the uterus should be curetted and irrigated with a 1 : 2000 bichloride solution, and if not immediately removed should be tamponed with iodoform gauze.

FIG. 2.

FIG. 3.




Retractors.

The cervix uteri and vaginal vault may be exposed by any form of vaginal retractors, but Péan's are probably the best, for they are more easily managed by the assistants, and thereby expose and protect structures better. While it may be necessary to use four retractors in some cases of morcellation of myomata, it is not necessary to use more than two—posterior and anterior—in operating for other conditions, and the anterior one may often be dispensed with.

The success of the operation depends upon our ability to control primary and secondary hemorrhage, to avoid injury

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to the bladder, ureters, rectum, and intestines, and to prevent soiling the peritoneum, all of which may be accomplished by proper attention to the details before and during the operation.

FIG. 4.

Retractor.

We should have several volsella and bullet forceps, and an assortment of reliable clamping forceps of different lengths that will hold firmly upon the tissues and will remain safely clamped.

I prefer the forceps of my device, the blades of which are so grooved that it requires relatively little force to bury them in the tissues, and they will not slip or be displaced. They are made of three lengths, six and a half, seven, and seven and a half inches. The use of scissors or knife is a matter of individual choice, but we should enucleate as much as possible

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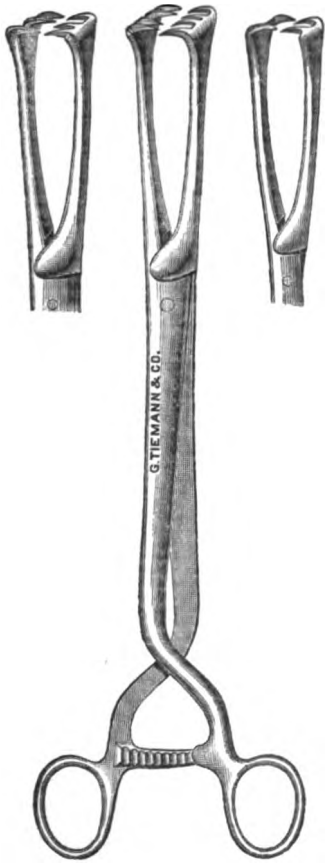
with the fingers and carefully push the bladder and ureters away from the uterus.

The removal of the uterus for bilateral diseases of the adnexa, where there are no pus-pockets, is a simple vaginal hysterectomy, the technique of which need not be considered.

FIG. 5.




Volsella forceps.

FIG. 6.

The vaginal incision should first be made behind the cervix, and may be continued at the base of the broad ligaments on

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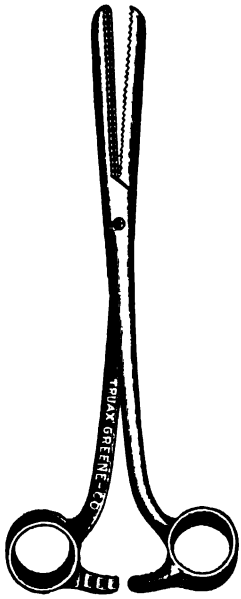
each side one-half inch or more beyond the cervix, and if necessary the posterior vaginal wall may be split to the bottom of Douglas's pouch. The incision of the vagina by the thermo-cautery is not necessary to control hemorrhage or for drainage. Enucleate with the fingers, and, if possible, open the pus-cavities and drain and irrigate them before ex-

FIG. 7.




Clamping forceps.

posing the peritoneum. This can be done in cysts or suppuration in the broad ligaments, or in other forms of pelvic suppuration where the pus has been shut off from the peritoneal cavity by plastic exudation and adhesions. In these cases the pus may be discharged and the cavities irrigated and disinfected without hemorrhage or the necessity of using a ligature or clamp. The hysterectomy may then be completed without danger of infecting the peritoneum. If there is induration without suppuration, the dissection into the

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folds of the broad ligaments will do no harm, and the resulting drainage may prevent suppuration if the infection is confined to the connective tissue. If the pus-pockets cannot be reached and treated in this way the peritoneum may be

FIG. 8.

Reflux irrigation-tube.

FIG. 9.

Self-retaining catheter.

opened and the tubes and ovaries explored with the finger, at the same time introducing a reflux irrigation-tube above the diseased structures and allowing hot water to flow steadily, so that in the event of accidental or intentional rupture the pus will be forced into the vagina.

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If the intestines and the omentum protrude into the vaginal wound or come in contact with the ovaries or tubes filled with pus, they should be replaced and protected by gauze or a sponge before the pus-cavities are opened. In such cases if there are intestinal or omental adhesions to the tubes or ovaries, these may be separated before evacuating the pus or enucleating the tubes or ovaries, or they may be separated after the uterus has been removed.

If, after Douglas's sac has been opened, the uterus can be removed without rupturing the suppurating tubes or ovaries, it should be done; for if these organs are situated high up, they can be enucleated or drained more easily and successfully afterward. In cases where it is impossible to enucleate and remove the entire tubes and ovaries they should be drained, irrigated, disinfected, and tamponed, and no immediate or subsequent trouble will usually follow; with few exceptions these patients make uninterrupted recoveries and are permanently cured.

In nearly all cases of hysterectomy, except for myomata, the uterus may be removed in its entirety; but if this cannot be done, we may resort to bilateral section and amputation of the cervix, hemisection of the anterior uterine wall, or antero-posterior section of the uterus. Hemorrhage may be controlled progressively from below upward; but if the uterus has been inverted anteriorly or posteriorly the clamps may be applied from above downward. Pus-pockets that are drained and cannot be enucleated should be carefully tamponed before the strips of gauze are introduced to cover the jaws of the forceps. The ends of the strips of gauze should lie between the handles of the forceps and extend nearly to the vulva.

In vaginal hysterectomy for myomata by morcellation adopt any method that best meets the indications, or combine two or more methods—namely, Péan's, Richelot's, Ségond's, Doyen's, Müller's, or Quénu's.

The field of operation should be thoroughly exposed, so

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that we may see the tissues we cut. Morcellation should not be attempted until the uterine arteries have been ligated or clamped. As morcellation is continued and the broad ligaments are divided an assistant should make firm and continuous traction with strong volsella forceps, which is an efficient means of controlling hemorrhage. In hysterectomy for broad-ligament myomata we should usually morcellate the tumors before we remove the uterus, but when myomata are developed in the walls of the uterus we may morcellate the tumor and the uterus simultaneously as may be indicated.

In conclusion I shall briefly refer to but five illustrative cases upon which I recently operated for bilateral disease of the uterine adnexa and uterine myomata:

Case I.—A feeble woman with bilateral intraligamentous cysts, the smaller of which had suppurated. The larger, filled with a clear liquid, reached to within one inch of the umbilicus; the suppurating cyst was the size of an orange. Both were drained and irrigated through the posterior vaginal incision before the peritoneum was opened. The uterus was then removed. She had no untoward symptom, was sitting up in six days, and walking a few days later.

Case II.—A confirmed invalid, with high fever and rapid pulse caused by a pus-tube and an ovarian abscess on the left side and a pelvic abscess on the right side. These abscesses were high up and could not be successfully treated until the uterus was removed. The tube and the ovary on the left side were enucleated, and the pelvic abscess on the right side torn open and irrigated. The patient sat up in seven days and walked a few days later.

Case III.—Temperature 103°, pulse 130, badly septic, with abdomen distended and pelvic abscesses upon each side extending nearly to the umbilicus. The cavities were opened through the posterior vaginal incision and each drained of more than a pint of offensive pus without opening the peritoneal cavity. The uterus was then removed, but the exudations were so firm that it could not be enucleated and had to be cut out with scissors. She was very feeble and intensely nervous; her pulse varied from 125 to 150 until the clamps were removed, thirty-six

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hours after operation. Twenty-four hours later the pulse was 85, temperature normal, and remained so. She sat up in seven days and walked in ten days.

CASE IV.—No children, but has had six induced abortions, the last two months ago, resulting in septic infection. The vaginal wall was incised, the broad ligaments opened, and a tubo-ovarian abscess on each side drained before exposing the peritoneal cavity. The uterus and the remnants of tubes and ovaries were cleanly removed. She had no untoward symptom, sat up within six days, and left the hospital in two weeks.

CASE V.—No children; has suffered for several years from pressure of uterine myomata which extended to the umbilicus. The uterus and tumor were removed by morcellation. There was no shock, and the woman recovered without an untoward symptom, sitting up in seven days and able to return home in two weeks.

In none of these cases was the operation followed by nausea, vomiting, or distention, and the patients relished food on the second or third day.

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# CONSERVATIVE SURGICAL TREATMENT OF PARA- AND PERIUTERINE SEPTIC DISEASE.

By Fernand Henrotin, M.D.,
*Chicago.*

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The American Gynecological Society is composed of experts who convene at regular intervals to discuss, in a broad, dignified, and liberal spirit, various vital and important questions pertaining to the development of that branch of medicine in which they are especially interested. In most gynecological societies the mere mention of the word "conservative" brings protests from all the ten-minute cœliotomists—suggestions of radical work being just as certain to stimulate the most energetic expressions from general surgeons concerning the extreme views of the specialists. Without taking into consideration the dissenting views of the timid general practitioner of limited judgment, the exclamations of the two above-described gentlemen are becoming very fatiguing. The man of sense and conscience, "who comes to town to stay," will be found all along the line as circumstances demand and as reason dictates. He who serves his patients best will reap gratitude at present and reverence in future.

Cœliotomy for removal of the uterine appendages as indiscriminately applied in the past is a most unsatisfatory operation. In spite of the great work and valuable lessons of the Taits and the Prices of both hemispheres, the short incision and the radical excision must fall back where they belong—to the selected cases, where they fulfil the indications, and which

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we now know are not so numerous as formerly imagined, for we have come to realize that in many cases the operation was too much, and in many not enough. The woman of to-day insists not only upon having a radical operation done successfully, but she also expects to be cured of her disease, with its accompanying pains, aches, and discharges. The surgeon of exclusively great experience is positively not the best guide as regards operative indications. His dictum concerning technique and immediate results is invaluable; whether he cures his patients of their diseases he seldom knows. The reason of this is evident. He does not practise medicine or surgery in the ordinary sense of the word. He reigns supreme over a college amphitheatre with its adjunct hospital, or he manages a large private sanitarium. Patients are sent to him by physicians who have learned of his great ability, and after a few weeks he sends them back cured of the operation, but frequently uncured of the disease. The doctor of one laparotomy always knows the result, both immediate and remote. A surgeon, of I should judge about three hundred laparotomies, in a discussion on this subject, mentioned that his results had been very satisfactory; that he did not have more than a dozen women who occasionally wrote him concerning bad symptoms of pain or discharge. How deceptive! Probably twice as many were writing or visiting some other surgeon, while a much greater number were at home nursing alike their sufferings and their loss of faith in the medical profession, and wishing their ovaries back.

This picture is a true one. A reasonable proportion of my patients are complaining to me and a reasonable proportion of yours also, while you are listening to the same plaints, and quite an army are suffering in silence.

Salpingectomy, salpingo-oöphorectomy, and oöphorectomy frequently fail to cure patients with peri- and parauterine septic disease. Hysterectomy has of late years been found efficient in curing many patients who were still suffering after the first-mentioned operations had been performed. The im-

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propriety of leaving behind frequently the chief offender among the pelvic organs has become evident, and a great step has, therefore, been made in the cure of these disorders. The amount of sentiment wasted upon the emasculated uterus, as Dr. Polk calls it, has always seemed ridiculous. Under such conditions, it is simply a cloaca for the origin of hemorrhage, the accumulation of discharges, and the development of malignancy. Whether done abdominally or vaginally, this operation has a great future, and in spite of opposition has made wonderful strides because of the thoroughness of its curative effects. In this country it is only a few years since it has been performed with deliberate intent, and with all its indications in view. It had originally been performed in an emergency, as a matter of expediency, when the destructive process made it almost a necessity. Péan, guided by his great surgical genius, first performed it, in his anxiety to cure a patient who had remained uncured after a salpingo-oöphorectomy. To-day it is an established procedure, and the position of advanced, observant gynecologists, who are not hampered by tradition or custom, or afraid of their own stubborn, dogmatic expressions in the past, can be stated as follows: "In every operation for septic diseases of the female generative organs which demands the removal of the tubes and ovaries, hysterectomy should also be performed, unless there are plain contra-indications forbidding it." This means that this operation, which ten or fifteen years ago was never done, which five years ago was rarely, and three years ago only exceptionally done, now should be the rule. It does not mean more mortality, and it does mean more perfect and complete cure. After you have laid violent hands upon the ovaries, it matters not what becomes of the uterus. This tragic cry that an organ should never be removed without cause is all nonsense, in view of the fact that it has been proved innumerable times to be an element of mischief. This is true conservative surgical treatment in pelvic septic disease.



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But, gentlemen, before you touch the ovaries, then is the time for the display of your sentiment.

Whatever men may say, women do recover from salpingitis and pyosalpinx, from oöphoritis, peri-oöphoritis, and ovarian abscess, from cellulitis and phlegmon of the broad ligament, whether these be of the catarrhal, puerperal, or gonorrhœal variety.

And they sometimes recover entirely and completely, so that this contingency, even if infrequent, must always be considered in forming surgical conclusions. Where surgical measures are considered proper and advisable, much depends upon the character and malignancy of the infectious material and the stage of the disease and amount of destructive process already present.

Having expressed the opinion that total ablation of the internal genitals of women in some cases presents the highest type of conservative work from the fact that it saves life and suffering, I beg leave to present for your judgment the result of some work which I have done in the line of conservative surgical measures on the old lines of vaginal section. I shall not weary you with extracts from the history of vaginal sections and punctures, written since time immemorial. What I have done is neither original nor a revival of the teachings of forgotten masters.

Pus sacs, or serous sacs, or masses of exudate have been punctured and incised in all manners and with all variation of instrumentation by surgeons for all times back. We have only to draw your attention to the writings of Laroyenne, Landau, Mundé, and innumerable others. Some have used the exploring needle and a trocar, emptied the cavity of its contents, frequently using irrigation. Others have introduced metrotomes through the trocar. Others, again, have incised directly and largely the septic focus or penetrated these pelvic cavities with different varieties of cautery knives. There is no need of mentioning authorities upon this subject, for the task would be interminable. It means simply that

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surgeons, recognizing the presence of enclosed septic material, have followed the general surgical rule of emptying, washing, and draining.

Sinclair, Mundé, and others advise free incision of tubes which are adherent to the peritoneum of Douglas's sac *per vaginam* subsequently washing out the empty tubes. Schröder has repeatedly employed this method in reaching adherent pyosalpinx. And so with many others, among whom I might mention particularly Réclus, Gusserow, Bouilly, Formento, of New Orleans, Cabot, of Boston, More-Madden, etc. Vuilliet (*Gazette médicale de Paris*, October 29, 1892) says that he has not done hysterectomy or abdominal section in suppurating pelvic disease in two years. In eighteen cases he adopted Landau's method without accident, loss, or relapse, generally using a trocar, which, after carefully locating the sac, he plunges into the cavity. If no liquid appears he makes another puncture. He repeats this at the end of ten or twelve days; if the fluid reaccumulates he injects after the second puncture one to two-and-a-half drachms of bichloride solution. If fluid returns after three or four punctures, he then incises and tampons with iodoform gauze, using a knife like a metrotome, slipping it upon the trocar. This is substantially the method described and practised by Laroyenne and Landau, both of whom have written masterly treatises upon the subject. Laroyenne and Goullioud, his pupil, claim an important place in the treatment of pelvic inflammations for their method, which opens up largely by the vaginal route parametric chronic collections and holds them open until cicatrized. Their method applies to the diverse fluid collections in the pelvis, tubal dilatations, serous or purulent effusions in Douglas's sac, retro-uterine hematoceles, parametric abscesses, etc. It suffices, they say, that the collection, large or small, should be clearly perceptible to bimanual palpation and be an inflammatory mass. It is not necessary to get fluctuation, which in the pelvis is difficult to make out. The immediate result is considerable ease, and eventually complete cure, even in mul-

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tiple pus foci. Remote results, they report, have been almost constantly satisfactory. Noticeable in this is the length of time in which observation is made of the patient's condition. Laroyenne records in regard to their ulterior condition all the cases which have been seen at least eighteen months after operation. Four women who had been operated upon afterward conceived and bore children.

Ablation of the annexa remains as an ultimate resource in case pain continues; then it is simply salpingo-oöphorectomy without pus.

The greatest recommendation of the operations of these various men is its lack of danger. Goullioud gives a series of seventy cases, with one death occurring twenty-eight days after operation, due to an abdominal rupture of an unexplored pyosalpinx. He eventually reports another series of sixty cases, with one death, due to secondary operation for artificial anus, the patient having afterward been operated upon abdominally, and a fecal fistula remaining.

Edmund Blanc, another pupil of Laroyenne, publishes a series of twenty-seven cases of chronic periuterine inflammation with serous, hemorrhagic, or purulent effusions. Many others, however, speak of the danger of these incisions and punctures, particularly the danger of wounding the ureters or the uterine arteries. Hoffmeier speaks of these dangers, and says it is necessary to use sharp or puncturing instruments; also mentions the difficulties encountered when one cannot exactly locate the pus sac.

There is no further need of multiplying these quotations, for not only does literature abound with them, but it is a subject with which you are all familiar, and the procedure is one which you will all, at one time or another, have employed. Nevertheless, it seems desirable that in this age of wholesale ablations these simpler and often successful minor methods should not be lost sight of. Personally, I have frequently drained pus collections in the pelvis through the vagina, these pus collections being the result of chronic inflammatory con-

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ditions. It seems only reasonable to suppose that such operations may be successful, even in the most chronic forms of pyosalpinx. What happens in such cases? Septic material travelling up the Fallopian tube, when the process is not too rapid, finds itself arrested at the abdominal opening by a closure of the *ostium abdominale*. An abscess cavity is developed in the walls of the tube proper. After a time the uterine end becomes closed, and then we have an independent pus sac, not communicating with either the serous or the uterine cavity. This may rupture into the folds of the broad ligament and work its way toward the vagina. If widely opened and drained and packed, after a time all the so-called pyogenic lining membrane disappears, granulations fill the gap, the Fallopian tube becomes obsolete, and the patient is cured.

One of the reasons of failure with many men in the past is due to forgetting to pay the proper attention to the condition of the adjoining uterus, this organ being left unattended to and frequently giving rise to further trouble. I do not mean to propose, as some most enthusiastic followers of these various measures have done, the employment of this vaginal incision as a substitute for more radical and complete work, but I am simply endeavoring to impress you with the absolute necessity of discrimination, and, with that intent, I quote the success that some others have attained in curing even the most serious forms of trouble by conservative measures.

In treating chronic cases of inflammatory septic disease it is necessary to make sure that a patient is incurable by milder measures before resorting to the radical operations.

In the first part of this paper I have drawn your attention to the fact that many patients recovered from the operation but were not cured of the disease, and that only the most complete ablations will suffice to cure some patients. But while we may, in the present state of our knowledge, be obliged to resort to the most serious radical operations to cure the patients entirely and properly, our minds should be con-

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stantly alert for the purpose of discovering methods by which the less severe operations may be made available. The difficulty of understanding and analyzing pelvic inflammatory disease becomes self-evident when we contemplate the many varieties which the disease may take. A simple, so-called catarrhal inflammation of slow progress following the mucous channels may result in a chronic hyperplasia, a sclerosed condition of the uterus, tubes, and ovaries, producing a most serious deterioration of health, and yet giving but very moderate evidence of its seriousness locally. Lymphangitis or phlebitis may bring about suppuration in almost any of the pelvic organs, or any part of these organs, giving rise to the most diverse and complex conditions. These inflammatory foci may cause fluid accumulations ot a serous, hemorrhagic, or purulent variety, or it may be only fibrino-plastic exudate, producing the most perplexing variety of symptoms, and the most obscure localization.

The gynecologist of the future, who has a conscience, must learn to carefully discriminate between cases. This whole subject will soon have to be gone over again by some master possessing practical experience and knowledge of the past, combined with an advanced special pathological understanding. The day will come when it will not do to say "Take it out," or "Leave it alone" simply, but when, having found a proper curative method for each variety of case, or for each stage of the different varieties, the application of the remedy will correspond in the most exact manner to the particular conditions existing. Our concentrated attention should especially be turned toward the management of septic troubles in their incipiency. It is a part of the subject very improperly understood and presenting many difficulties. Patients, as a rule, depend for their care upon the general practitioner in the first stages of the disease. However competent and conscientious the gentleman may be, the multitudinous variety of his work makes it well nigh impossible for him to devote special attention to this particular branch.

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The time to cure septic inflammatory diseases—that is, to cure them completely and perfectly—is within the first few weeks of their appearance. We all know that a few days may bring about such a change in the pelvic structure of woman that a lifetime of careful, conscientious treatment by the most competent of specialists will not eradicate.

What means have we at our command this day to control or cure an invasion of septic material, either in the uterine cavity, or in the tube, or in the cellular tissue of the pelvis, or on the serous lining of the peritoneum? Mr. A., of New York, says: Dilate, curette, and pack at once, or the disease will be beyond your reach. Mr. B., of Philadelphia, says: Do not curette or do not pack, because you will bring about the most serious varieties of pelvic suppuration, for have I not noticed that all my cases of abdominal sections have formerly been curetted? Therefore, curetting produces pyosalpinx, etc. Then Mr. C. of Baltimore, says: Curette and do not pack. Mr. D., of Washington, says: Use hot douches, and never enter the uterine cavity, but keep the parts clean and at rest, and your patient will recover. What a chaos! The instrumentation of the uterine cavity, which in the hands of some apparently controls—cures the disease—becomes in the hands of others agents of destruction. An honest statement of facts must lead to the acknowledgment that many women suffer more from the doctor than from the disease. Personally, I do not doubt that another decade will dispel many of the shadows hovering over the treatment of various stages of acute inflammatory affections of women. One of the most distressing experiences of the past has been the difficulty of preventing the disease from invading extrauterine localities. A septic endometritis will affect the tubes, or the peritoneal cavity, or the parametric spaces, or the ovary, in spite of our most enlightened endeavors to control it. Once the disease has reached this point, with many men, no available means of treatment seems useful. Unfortunate women seem doomed to wait patiently for the surgeon's knife, dallying with the hot

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douche and the warm poultice, if the difficulty seems so acute that curettage is inadvisable or seems dangerous.

Allow me, with the object in view of endeavoring to fill this unfortunate gap in the treatment of inflammatory affections of women, to suggest for your consideration a method which has given me very satisfactory results in the treatment of acute inflammatory affections during the last two or three years. Unfortunately, the number of cases is not sufficiently large to form a foundation for a very positive opinion, or the details explicit enough to lead to an analysis sufficient for differentiation. I cannot state the procedure more definitely or plainly than by saying that for the last two or three years, whenever pelvic disease gave evidence of having penetrated beyond the cavity of the uterus, I have habitually made it a practice to make an incision behind the uterus, and to digitally explore the pelvis. However crude may be this explanation of the procedure, I am perfectly convinced of its great value. The vaginal incision, in the manner indicated, carries with it but little, if any, danger. I have already pointed out to you how little risk is encountered in puncturing or incising more or less chronic pelvic accumulations of a morbid kind by this route. In acute and early cases I have had occasion to operate within the last three years upon twenty-seven women, all of whom have made a satisfactory and, apparently, permanent recovery. This, however, represents such a small number, with so little experience, that deductions are only to be made with a great deal of circumspection. When an infection travels by way of the lymphatics into the broad ligament and produces what is known as a "phlegmon" of the broad ligament, its march is frequently excessively rapid, and a swelling occurs on one side or the other of the uterus, characteristic of these forms of disorders; or it may be that the infectious material travels by another lymphatic route, affecting the ovary only. Dr. William R. Pryor (*American Journal of Obstetrics*, July, 1893) thinks that there are two sets of uterine lymphatics—one surrounding the surface and extend-

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ing laterally into the parametric spaces along the lower border of the broad ligament, the other following the course of the ovarian arteries, along the upper edge of the broad ligament, and having their origin in a network surrounding the corpora lutea. Clinically, according to my experience, this seems to be true, for I have repeatedly been able between the folds of the broad ligament to enter into and drain ovarian abscesses, other parts seeming apparently healthy.

The difficulty in presenting this matter to you properly seems to lie in the impossibility of distinguishing the exact locality drained in each instance. Sometimes the finger penetrates posteriorly, apparently through the broad ligament, and separation of plastic exudate lying between intestinal folds is evident, showing the disease, in these instances, to have been a true peritonitis, the draining of which seems to be followed by amelioration. For many years I have followed but one rule in draining these cavities within the pelvis; this was, to make an incision moderately circular, close to or rather slightly on the posterior surface of the cervix, and to dissect back the vaginal mucosa through the cellular tissue to a point beyond which the wounding of the uterine artery seems improbable.

This incision never extends beyond the outer limits of the cervix. When, in dissecting back through the connective tissue, closely hugging the posterior wall of the uterus, sufficient room is not gained, a perpendicular incision, beginning at the middle of the posterior border of the first, and running downward, parallel to the vagina, in the median raphe, is made, taking care not to penetrate sufficiently deep to wound the rectum beneath. With the exception of an occasional slight nick with the points of curved scissors, the finger is used exclusively in the manipulation. The disengaged hand being now placed upon the abdomen, the operator is to proceed the same way as in making bimanual palpation, and gradually penetrates the tissues in the direction of the centre of the affected region. If the exudate is situated at one

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side or the other, the finger penetrates backward until the bimanual sensation indicates that the peritoneum, posteriorly, is almost reached. The finger now being turned to the right or left, as the case may be, and the superimposed hand being shifted to the affected side, there is usually no difficulty in penetrating the septic mass. As soon as the finger within reaches the exudative material the sense to the touch will be self-evident. In the majority of cases an abscess cavity is found, a fact which is easily determined without withdrawing the finger. As, during these manipulations, the peritoneal cavity may have been accidentally opened, without our knowledge, it is better to retain the finger in the opening leading to the abscess, and irrigation of the vagina may be practised with the finger still *in situ*, after which iodoform gauze is packed in the vagina and in the wound proper up to the opening of the abscess; the finger now being withdrawn, the pus is allowed to flow. Slight pressure may be made upon the abdominal wall, so as to empty the cavity as thoroughly as possible. The packing is now removed, the vagina once more cleansed, and the finger reintroduced into the abscess-cavity a second time. Now comes an important part of the procedure, and that is the thorough exploration of the abscess sac, for the discovery of any additional collections in the neighborhood, each collection being treated in the same manner. The other side is now explored through the same vaginal opening, and, if necessary, the same procedures are here employed. Any hard, inflammatory masses are to be penetrated by the finger, whether they contain pus or otherwise. No instruments are to be used during any stage of the operation after the vagina and submucous tissues have been incised. All inflammatory foci having been explored and penetrated, every portion of the cavity or cavities is to be carefully packed with iodoform gauze, wrung out in 1 : 3000 bichloride solution. I have no doubt the packing with plain gauze and sterilized water may answer as well and possibly better. The ends of the gauze strips are to be carefully retained, so that

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they all protrude into the vagina through the vaginal wound. A little additional packing can frequently be advantageously placed in this vaginal buttonhole, so that it will remain quite distended, allowing a free drainage. The vagina is now moderately packed with gauze, and the operation is thereby made complete.

In some cases one will find the mass of exudate immediately posterior to the uterus in the median line. This inflammatory enlargement may be extra- or intraperitoneal. It matters not, it must be thoroughly penetrated and drained until it is evident by bimanual touch that the finger has reached its outermost limits. The finger is always, in all cases, to be worked from side to side until one's surgical sense indicates that drainage is more than sufficient. In other cases the finger will come almost at once upon the peritoneum, and the space at one's command, opposite Douglas's sac, may not exceed half an inch; but if the finger is now turned to one side or the other, the layers of the broad ligament may be separated, and the finger pushed into large masses at either side without opening into the general cavity; or, again, the finger being pushed to one side when the peritoneum is reached, the parts separated may be felt to be thin, pliable, and apparently perfectly healthy, until the operator reaches on the posterior wall of the broad ligament a round or oval, soft, thin walled, fluctuating sac, evidently an ovarian abscess. At this stage I have repeatedly had my assistant introduce the finger to palpate the sac wall before penetrating it, and giving an exit to a large amount of pus. In a reasonable number of cases no pus is found, the enlargements consisting entirely of a conglomerate mass of exudate. Particularly is this true of those forms of disease which are apparently intraperitoneal. Personally, I believe that it makes but little difference in the result if the general cavity of the peritoneum is opened. A number of times, I am convinced that such was the case in my patients, but not the least reaction followed. In one instance, in a patient operated upon by a colleague after this method, I pulled down

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a presenting portion of omentum to make certain of the fact, the patient recovering the same as the others. The packing is not removed for three, four, or five days, unless her general condition indicates a retention of secretions. The wound may be kept open by a replacement of the packing three or four times, several days apart; but it has been my custom after eight or nine days, if the patient's condition is favorable, to simply use vaginal douches, taking care that the vagina is kept as aseptic as possible. No irrigation is to be used at the time of the operation beyond the vagina; but, if the abscess-sac is large, it has been my custom to introduce a small tube, and to irrigate freely after the second or third dressing. The effect of this procedure in some patients is simply magical. The pains, hectic, and distress all disappear, and the patients, in the vast majority of instances, make a rapid recovery.

A uterus that has been retroverted and retroflexed is lifted, in the cases of retrouterine exudate, to a higher plane, and remains after the cure in a much more favorable position. At the end of two or three weeks it has often almost entirely regained its mobility, and an examination of several of these patients a number of months later has seemed to me to leave very little to be desired.

In case the inflammatory affection has encroached upon the vesicouterine cellular pouch, bounded externally by the round ligaments, the same procedure can be used, making the incision in these instances anterior to the cervix, and dissecting back between the uterus and bladder until the inflammatory centre has been drained.

Allow me to give you a striking illustration of the value of this method. Four years ago a young girl, fourteen years of age, who had apparently had several attacks of appendicitis, developed a pelvic inflammatory affection, which resulted in complete fixation of all the organs, the filling of the whole pelvis with large exudative masses, and resulting, after intense suffering and four months of critical illness, in an abscess,

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which, fortunately, made its escape by way of the rectum. After remaining well for a year and a half she suddenly developed another acute attack of the same variety. I had failed to examine her in the interval between these attacks, so that I cannot tell how far and completely she recovered, though she was apparently in perfect health. This, then, was a second attack, coming in a girl in apparent health, and ushered in by the most serious symptoms of rigors, fever, painful micturition, and painful defecation. Alarmed at the possibility of her having to go through the same ordeal as in the former instance, when her life was in such jeopardy, with the consent of her parents I immediately performed cœliotomy, intending, if possible, to abort the threatened destructive process, and, if necessary, to remove the offending organs. The condition of the parts forbade further operative procedures by way of the abdomen. The uterus, ovaries, tubes, and all parts concerned were absolutely fused into one conglomerate mass, which meant that, in a girl of sixteen, I would be obliged to do a complete ablation, with the greatest danger to her life, and the blighting of her future. Closing my abdominal incision, I put her upon her back, and through the little narrow vagina I incised the vaginal roof close to the cervix, anteriorly and posteriorly, penetrated both broad ligaments to their outermost limits, as well as the utero-vesical space, packing, as aforementioned, with gauze. No pus was encountered, but the disease was stayed. I examined this girl four weeks ago. She had been ill in bed only four weeks following the operation, and has now been fifteen months in perfect health. Her uterus is movable, though not to the same degree as you might expect in a perfectly healthy girl; but there is no thickening and no enlargement, and no appearance of disease.

For many years I have opened pelvic abscesses in this manner, never making use of any instruments beyond the first incision and a few nicks of the scissors in the second layer. Making the incision closely upon the cervix, adding to it the secondary incision at right angles down the vagina,

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if necessary, prevents hemorrhage from the vaginal vessels. Once having reached the cellular spaces, the finger can be guided inward within the pelvis. It is, to me, infinitely safer, and preferable to various methods of trocar-puncturing, needle-exploration, and cautery-knives. It is simplicity itself, and requires only a few minutes for its performance. But this matter of opening abscesses is an old, old story. It is the application of this method of treatment for the cure of inflammatory pelvic affections in their very incipiency.

Allow me to describe in a few short words my last case, as it represents a perfect type of the value of this method:

A young woman having forgotten herself, and being two days past her expected menstrual time, resorted to the services of an abortionist for the arrest of a supposed pregnancy, which, however, did not exist. Following the introduction of some instrument into the uterus, she suffered for two days very intense pain, accompanied by some fever. She was not, however, confined to her bed. The desired menstruation not making its appearance, at the end of six days she returned to the man's office, and a second instrumentation was followed in thirty-six hours by a severe chill, high fever, and excessive pelvic pain. On the sixth day of her illness I saw her in consultation, finding an inflammatory swelling to the left of the uterus in the broad ligaments. On the seventh day, under ether, I made the posterior vaginal buttonhole, penetrated the tissues with my left forefinger, and opened an ovarian abscess containing fully four ounces of pus. Eighteen days later this woman walked two blocks to the street cars and rode home. Her uterus was almost entirely movable; there was no apparent discharge; the woman was to all appearances cured.

Bear in mind the salient points of such a history; refer back to cases of that variety which you have seen linger for months in bed, afterward returning for a cœliotomy and ablation of the appendages. Remember that this woman was sick

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only seven days, and yet a good four ounces of pus were found in her pelvis, and at the end of three weeks she returned home apparently cured—that is, physiologically, symptomatically, and, to all appearances, entirely cured.

It is not only the application of the old surgical principle to evacuate pus as early as recognized, but this operation strives to go farther. It shows to us that, pus or no pus, the character of exudative material of the variety that is usually found in the pelvis is susceptible of absorption when broken up and drained. In some way, as happens within the peritoneal cavity when a drain is introduced, septic material from within seems to be drawn toward the breach that has been made, and if sufficient outlet has been provided, and if the parts are kept sufficiently aseptic to prevent mixed forms of infection at that site, the bacteria are usually destroyed and expelled, the exudative material is replaced by granulating tissue, and a cure results. No matter what success a man may have as a skilful enucleator of large and old pus sacs, he must indeed be bold who would deny the advantages of an early incision through the vagina if it can be followed by such good results as are apparently shown by cases as they have come to my notice. The objections that hold good against the vaginal incision in old pyosalpinx and other cavities which have destroyed, to a great extent, the organs in which they originate, have but little weight when applied to the procedure which I advocate. We are here simply incising, irrigating, and draining localities permeated with recent lymph. The more I see of this work the more I have reason to believe that it is of value, and probably it will soon be determined that the earlier the operation is done the more striking are its benefits. It is a question with me whether it will not be recognized in the future that an incision in the sac of Douglas, performed at the very incipiency of a pelvic peritonitis, establishing a drainage for the primary serous effusion that occurs, will not prove an invaluable means of aborting and controlling

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these nefarious processes. It means the elimination of the noxious material as soon as it becomes palpable.

I had almost forgotten to say that in every single instance in which this operation is performed the uterus is to be carefully, thoroughly, and intelligently curetted. Failure to cure incipient septic disease in women arises most frequently from an inability to exactly locate and reach the exact seat of the affection. If a woman suffers from an endometritis, pure and simple, she can be cured by an intelligent and thorough curettage, if every vestige of the diseased tissue can be reached and removed. Here we have facing us the frequent inability to reach the cornua of the uterus at the opening of the Fallopian tubes. In some cases, without our knowledge, the disease has already encroached upon the tubes themselves, and is, to a certain extent, beyond our reach. In other varieties, some of which also we are not able to diagnosticate, the virulent micro-organisms have penetrated through some of the aforementioned channels, beyond the uterine body, in one or the other direction, and my contribution to your understanding of this subject is an attempt to point out another method of combating these unfortunate affections, according to reasonable indications. The demonstrations of the value of my suggestions will probably fall within the province of the consultant, whose practice brings him face to face with these diseases in the first part of their course. The great hospital operator will probably see but few of these cases at a sufficiently early stage to verify the value of the proceeding. It has seemed to me to be a most valuable adjunct in the treatment of the septic diseases of women, and is presented to you with the hope that it may become a respectable addition to the methods in vogue for the conservative surgical treatof these affections.

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# SPECIMENS OF TOTAL VAGINAL EXTIRPATION OF THE UTERUS, AND OF LARGE FIBROIDS REMOVED BY ABDOMINAL SECTION.

By R. Stansbury Sutton, M.D.,
*Pittsburg, Pa.*

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During my vacation last year (1894) I had the pleasure of witnessing five total extirpations of the uterus and appendages by Dr. Jacobs, at Brussels. I desire first, as a Fellow of the Society, to thank Dr. Jacobs publicly for his hospitality to me, and to bespeak for him a cordial welcome to the unbounded hospitality which has always characterized the great American medical profession to which we belong.

These cases, twelve in number, are all in which I have removed the uterus *per vaginam* in my private hospital since my visit to Dr. Jacobs, up to May 1, 1895, and which I respectfully submit to your kind consideration.

The method practised by Dr. Jacobs is that of Péan, modified so far as the use of the cautery is concerned. Dr. Jacobs has already given you his technique, and I shall not repeat it:

Case I.—October 27, 1894, Mrs. S., aged thirty-three years. Had her ovaries removed on April 7, 1893, a little over eighteen months previously. Since this operation she has been curetted for periodical hemorrhages three times without relief. Uterus was found quite adherent, and was removed by Jacobs's modification of Péan's method. She was out of bed on the seventh day; recovery uneventful. The uterus contained nothing which would account for the hemorrhages. Specimen lost.



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CASE II.—Mrs. S., aged forty years. Menstruation painful and irregular; left ovary prolapsed and adherent; right ovary and tube enlarged; specific chronic endometritis; uterus and appendages removed; left ovary large; tube thick as the thumb, filled with blood. Patient out of bed on the seventh day. Complete recovery, uneventful.

CASE III.—Mrs. W., aged twenty-nine years. Ovaries and tubes removed for specific chronic salpingitis and ovaritis, April 24, 1893. Has continued to bleed irregularly and profusely; is slightly insane, with distressing insomnia; has been curetted several times; patient has recurrent pelvic peritonitis. Uterus found abnormally soft; endometrium granular or villous. Sat up on the seventh day. Recovery uneventful. Dr. Edebohls was present at this operation.

CASE IV.—November 28, 1894, Mrs. H., aged thirty-six years. Suppurative endometritis. Ovaries and tubes normal; uterus removed, appendages left. Sat up on the sixth day. Recovery uneventful.

CASE V.—November 29, 1894, Mrs. S., aged thirty-eight years. Last confinement in 1879. Has been an invalid ever since. Tenderness at both sides of the uterus; has had convulsions during the last year, always at the menstrual period. Uterus and appendages removed. Sat up on the seventh day. Recovery uneventful.

CASE VI.—December 1, 1894, Miss M., aged thirty-two years. Fibroid, which weighed five pounds, growing out of the fundus; the uterus was entirely removed by the vagina, but, owing to the extreme darkness of the day, I opened the abdominal wall and lifted out the fibroid in less than one minute; no bleeding requiring attention, the wound was closed, and patient put to bed. Recovery uneventful. The specimens were taken by her physician to a distant point and afterward burned, so that I have not got them. It is possible that in this case I would have failed to remove the tumor by morcellation, it was so large and hard. At all events, discretion was the better part of valor in this instance.

CASE VII.—January 21, 1895, Mrs. G., aged thirty-eight years. In October, 1893, her ovaries and tubes were removed; there was

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pus in both tubes; the uterus was normal in size, and presented, from the abdominal side of the case, nothing unusual. Her irregular bleedings continued unabated. I removed the uterus by the vagina, and found imbedded in the wall of the uterus a small fibroid tumor. Recovery uneventful.

CASE VIII.—February, 1895, Miss E., aged fifty-one years, a woman of unusual refinement and very delicate. Has had uterine hemorrhages for seventeen years, for which she has been curetted a great many times. Uterus movable, apparently normal in size, as are also her ovaries and tubes. This examination was the first one, and I had never seen the patient before. The persistence of the symptoms and the age of the patient led me to suggest total extirpation, which suggestion was promptly acceded to. The character of the specimen, which is here, proves the correctness of my prompt action. A small sarcoma is seen in the fundus of the uterus. Recovery uneventful. Microscopical examination shows the presence of oval cells whose nuclei vary from the size of an endothelial cell to five times that size. The tumor invades the adjacent tissues, not being exactly circumscribed; there is considerable intercellular substance. Round-cell sarcoma.

CASE IX.—February 13, 1895, Mrs. H., aged thirty-seven years; married nine years, and has one child aged eight years. Has had convulsions for four years, worse at the menstrual periods; had severe hemorrhages for one year; uterus contains a myoma. The uterus, tumor, ovaries, and tubes were all removed by the vagina. Recovery uneventful. Microscopical examination of the tumor shows the same to be a myoma.

CASE X.—February 23, 1895, Mrs. H., aged thirty-seven years. Cervix lacerated; chronic specific endometritis, salpingitis, and ovaritis; appendages adherent; all removed *per vaginam*. Recovery uneventful.

CASE XI.—March 9, 1895, Mrs. J., aged twenty-four years. Husband had gonorrhœa before she married him. Chronic specific endometritis; pus-tube on right side; left ovary and tube tender; uterus, ovaries, and tubes removed *per vaginam*. Six ounces of foul pus removed from tube during operation. Adhesions separated by finger following line of cleavage. Patient sat up on the sixth day. Recovery uneventful.

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CASE XII.—April 11, 1895, Mrs. R., aged thirty-eight years. Ovaries and tubes removed; left one nine years ago, the right one a year ago. Has had pelvic abscesses, and during the last year pus escaping by rectum. Uterus removed *per vaginam*. Recovered with a fecal fistula.

These twelve cases of total extirpation in my private hospital were consecutive, and have all recovered as stated. They comprise all the total extirpations done in the institution by Péan's method up to May 1, 1895.

I beg to offer the following specimens also:

1. Obtained March 27, 1895, from a patient aged thirty years.

This specimen is one of multiple myoma which was removed by abdominal section, antero-posterior flaps of peritoneum, ligation of uterine arteries, amputation of cervix at internal os, interrupted suture of the antero-posterior peritoneal flaps, abdominal technique being of course as usual. No drainage. Patient recovered promptly, and left the hospital twenty-one days after operation.

2. Was obtained by operation, April 27, 1895.

Patient, aged twenty-nine years, had been married ten months; had missed two menstrual periods; presented herself with this enormous myoma, which weighed over ten pounds, growing like a mushroom. Pulse, 100. Temperature, 100.5.° I here present also the pregnant uterus, which I removed with the tumor. Patient recovered without any difficulty.

3. This specimen, consisting of a subserous myoma, was obtained May 9, 1895, from a young woman twenty-eight years of age, who was pregnant for the first time at three and a half months, and was suffering great pain. Her tumor made its appearance—in accordance with her story—within eight or ten weeks. The operation was done in the same manner as in the previous case, and was followed by the uninterrupted recovery of the patient.

4. This specimen of multiple fibroids was obtained by

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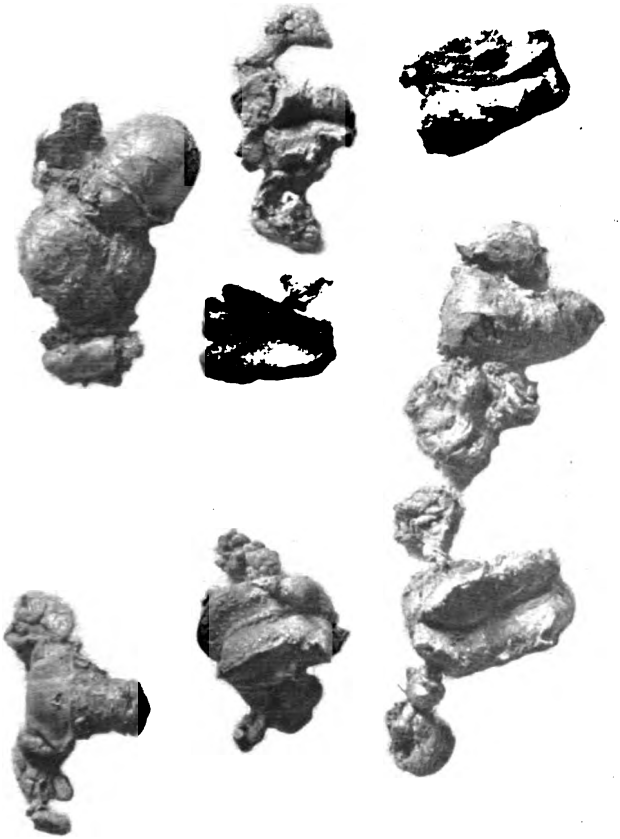

Uteri removed per vaginam. Cases I. to XII. in notes.

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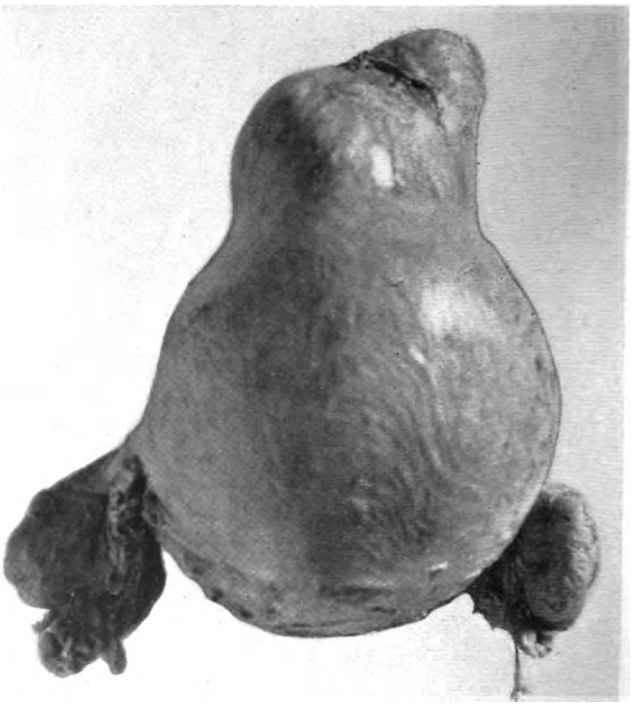

**Myoma.**

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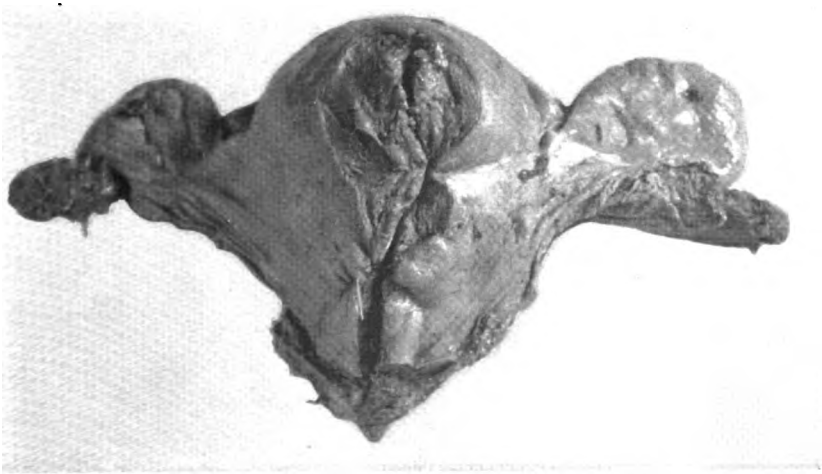
Tumor belonging to pregnant uterus.



Uterus, pregnant.

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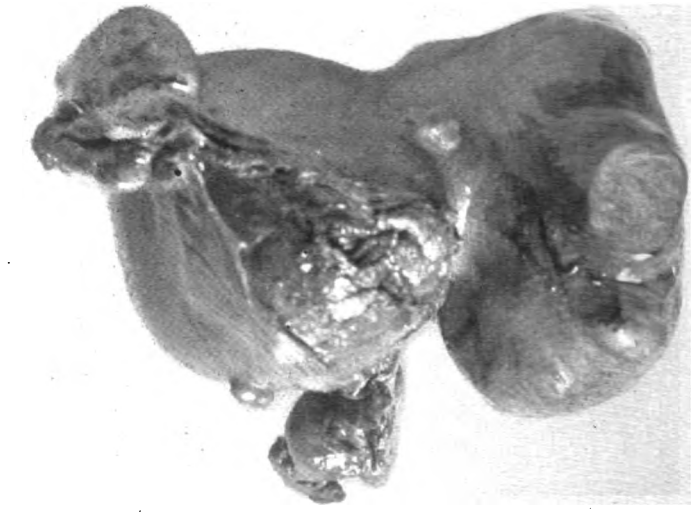
Myoma.



Pregnant uterus and myoma.

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operation on March 1, 1895, from a lady aged thirty-six years. She was very feeble and anæmic when operated upon. The operation was done by the same method as in other cases, except that I placed her in the lithotomy position and took out the cervix. She died three days afterward from exhaustion.

## DISCUSSION.

Dr. E. E. Montgomery, of Philadelphia.—Had there been no other papers read before us than these to-day, the Society would have been well repaid for this meeting, for certainly the discussion of no other subject will have greater influence on the profession and on the welfare of our patients.

I am sure that we shall all come to the consideration of this subject unbiased by previous prejudice. What we all desire is results, such results as are for the best interests of our patients—not only the immediate results, but the ultimate as well.

When we consider the statistics which have been presented to-day, of 403 cases treated by one gentleman with a mortality of 2.9 per cent., a mortality by Péan of 4 per cent., by Richelot of 4.13 per cent., and when we consider that in a series of 112 successful cases there were 30 per cent. with complicated inflammatory conditions, I am sure that you will agree with me that these are results which it is exceedingly desirable to attain. They are immediate results which surpass any yet obtained by any other operative procedure in the treatment of such cases.

Taking such results, about 3 per cent. mortality in a large series of cases, it raises the question why the operation of vaginal hysterectomy should not be substituted for, and preferred to, abdominal hysterectomy. If it is not, there must be, of course, certain considerations and conditions which render the abdominal procedure more desirable, such as the ultimate results upon the health of the individual.

When we consider the results of the operation which have been presented—a series of 403 cases with but 9 cases of fistula, 5 of which were intestinal, 3 vesical, and 1 ureteral—with the same result in a similar class of cases operated upon by the other

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method, where we know that there is danger, in spite of every precaution taken against infection by ligature and subsequent inflammatory conditions, of fistula forming, they speak in favor of the vaginal method.

In addition to the immediate advantages of the operation which has been advocated to-day, there is the absence of the disadvantages of abdominal incision—the long-continued convalescence, the abdominal cicatrix, the subsequent danger of ventral hernia. When we consider these it certainly looks to me as if the operation of vaginal hysterectomy is the preferable procedure. Then, as stated in the papers to-day, the vaginal operation may be made simply an exploratory one. Taking the first step does not necessarily mean that it must result in a radical operation. It enables us to explore the pelvic viscera, to determine the extent of their involvement, and only in such cases as the disease of the viscera demands it is vaginal hysterectomy carried out.

When we consider that after removal of the ovaries and tubes the uterus is practically of but little advantage; that in many cases where that organ is allowed to remain it is a source of danger and discomfort; not only so, but that the condition of the patient is often aggravated so long as it remains, it becomes the preferable procedure to remove this organ along with the tubes and ovaries.

I would not go so far, as did the gentleman who read the paper, as to assert that in every case of bilateral disease of the ovaries and tubes these organs and the uterus should be removed. Nor would I be willing to admit that in every case of ectopic gestation both ovaries and tubes were necessarily involved. For I have seen, as doubtless many of you have seen, cases in which women have had one ovary and tube removed, or in whom there has been an ectopic pregnancy on one side remaining in the pelvis for a number of years, while she became pregnant subsequently and gave birth to a child. So that where a patient has ectopic gestation involving only one tube I could not consider it a justifiable procedure to extirpate the uterus. Indeed, in these cases it is a question in my mind whether the vaginal is the safer method.

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As to the treatment of malignant disease, I fully agree with the gentleman as to the wisdom of removing the uterus through the vagina. The same is true of fibroid growths which render retention of the uterus impractical. I certainly would not, however, advise or advocate removal of the uterus in every case of fibroid tumor, for I agree with some of the gentlemen who spoke yesterday that some fibroid growths, whether of the submucous or subperitoneal variety, can be removed and leave a healthy, functional uterus.

The great advantage of treatment by the vagina is, as I have said, that it enables us to meet those cases in which the disease does not demand entire extirpation of the uterus and appendages; it enables us to give vent to the discharge, either in the early stage or even later, leaving the patient subsequently functionally well. I have seen a number of patients in whom there has been inflammatory trouble involving one or the other side of the pelvis, in whom there was fixation of the uterus and abscess of the ovary, and by opening the pus accumulation and packing the cavity with gauze the final result was its obliteration, with absorption of the exudate and restoration of function in the pelvic organs. Indeed, I question whether formerly we did not subject many patients to radical operation who suffered subsequently from other inconveniences more troublesome than the first, when it might have been easily relieved by vaginal incision and drainage. I must confess that I have had many such cases myself. Without doubt, I may repeat, there are many patients in whom possibly some inflammatory condition exists, with a tendency to recurrent attacks, in whom removal of the tubes and ovaries, as done in the past, leaves a series of unpleasant phenomena which could be avoided by a simple incision. Had we, in such cases, endeavored to retain a portion of the ovary and tube the patient need not have lost hope of progeny.

Dr. J. M. Baldy, of Philadelphia.—I would like to draw the lines in the discussion hard and fast, and I wish to draw them clearly and definitely between the advantage of hysterectomy by the vaginal method and hysterectomy by the abdominal method. On account of lack of time I propose to ignore to a large extent all other questions raised in the paper. Many of

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them I can agree with, but from others I would be compelled to differ. I shall exclude from my remarks that class of cases in which there is acute puerperal septicæmia with intraperitoneal abscess. On the other hand, I wish to include in my remarks every other variety of cases mentioned in Dr. Jacobs's paper, as cancer, fibroid tumors, prolapsus, pelvic inflammation, extra-uterine pregnancy, and the rest.

What are the advantages or disadvantages offered by the gentlemen who are in favor of vaginal hysterectomy as against the abdominal route? First, against the abdominal route is the abdominal scar and subsequent danger of hernia. Now, right here allow me to admit that this is a proper objection, and it is the sole disadvantage of the operation. It is the greatest disadvantage with which we have to contend in the discussion. When, however, thirty-three per cent. is put down as the proportion of cases in which herniæ result, I do not think that there is a gentleman present who will for an instant grant it; nor will he grant three or two per cent., certainly not as hysterectomy as done in the hands of the gentlemen who are doing it through the abdomen.

As to the convalescence by vaginal hysterectomy, the patient gets up in seven days. Grant it. Abdominal hysterectomy pretends to no such saving of time. And I consider it one of the greatest disadvantages that could possibly be offered a patient who has been so sick as to need hysterectomy to be allowed to get out of bed under three weeks, or a month, independently of hernia or anything else. I consider that month in bed invaluable to my patient. She is a broken-down, miserable woman, and that month of careful nursing, feeding, and resting is invaluable to her. We are asked to deal with facts in this matter and not sentiment, and I shall deal with cold facts. In the next place, it will take one-third the time to do above what is done below—one-third the time or less. Time is therefore against the vaginal operation, and you must all admit that the length of time under ether is of extreme importance to many patients.

As to the difficulties of the operation Every man whom I have known to have done both abdominal and vaginal hysterectomy, including myself, admits that the vaginal is by all odds the more difficult operation of the two. It is a harder operation on

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the operator and requires more muscular effort—therefore more traumatism.

As to the dangers. You have had placed before you a series of 403 cases with 9 fistulæ. I cannot place as large a number of statistics before you of operations done by the abdominal method, but in a series of 224 cases not a single fistula resulted. A fistula is not a possibility after abdominal hysterectomy, and in this series of 224 cases something like half a dozen fistulæ existed at the time of the operation, all of which were cured by the operation. If a fistula does occur by the vaginal method, an abdominal section must often follow in order to repair it. What possible risk is there in ventral hernia which takes place after abdominal section compared with the risks and dangers of nephrectomy or of intestinal resection, which it has been necessary for Dr. Jacobs to resort to on account of fistulæ following vaginal hysterectomy? Fistula is more common by the vaginal route than is hernia by the abdominal route, and it is much more difficult and dangerous to cure. Jacobs is not alone in reporting these results; Ségond and all other French operators report similar disasters. They talk of death; fecal and urinary fistulæ are at times worse than death. In this class of results abdominal hysterectomy has again the decided advantage.

As to diagnosis. By the vaginal route I grant you may begin your operation as an exploratory one, but you may do the same by the abdominal route. The question arises: By which one can you decide best whether to stop the operation or to go on? There can be no question in the minds of gentlemen who have done both operations that it is infinitely easier from above, and also safer for the patient. In cœliotomy you would never remove the pregnant uterus and not know that it was pregnant, which has been done more than once by way of the vagina. In unilateral disease of the appendages, you would stop with a unilateral operation from above and not sacrifice a good ovary, Fallopian tube, and uterus. From that point of view the abdominal operation undoubtedly has the advantage, for, in spite of all that can be said to the contrary, those of us who have operated *per vaginam*, and have seen others so operate, know that in inflammatory cases an intelligent exploration is exceedingly difficult and often impossible from below.

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As to the chances of completing the operation. All these gentlemen who advocate the vaginal method admit that they leave behind at times ovarian tissue, tubal tissue, and uterine tissue, which it is impossible for them to remove. Those of us who operate from above never do this. Every particle of tissue—uterine, ovarian, tubal—disappears, and when the operation is completed there is not a vestige of the diseased organs left. From this point of view, again, the abdominal has the advantage over the vaginal method.

As to the mortality. There we must rest after all as to the relative value of these operations. The claim has been made to-day that we must choose the vaginal route because it is safer and has less mortality. A collection of 724 vaginal operations by the most eminent operators—Jacobs, Péan, Ségond, Pozzi, etc.—gives a mortality of 4.6 per cent. On the other hand, and in direct contrast with these results, we have a collection of 224 operations done by American operators by the abdominal method with a mortality of 2.7 per cent.—operations performed by such men as Polk, Pryor, Krug, Penrose, Kelly, my own cases, of course, included. The mortality record is the final argument which I advance in support of my position in favor of abdominal hysterectomy as against vaginal hysterectomy, and, together with all the other advantages pointed out, must settle the question as to the choice of routes.

One objection alone holds against abdominal hysterectomy—hernia. At all other points the evidence is overwhelmingly in favor of this procedure.

One more point, and I have finished. It is said to us that some cases cannot be operated upon by the abdominal method which can be safely operated upon by the vagina. I know of but one case on record where that point was tested. The abdomen was opened and the case pronounced inoperable by the surgeon. The wound was closed and the patient recovered. This patient was subsequently operated upon by the vagina by another equally skilled operator and diagnostician, and within an hour was dead. That is the only case in which the two operations have been brought in contrast, and the result will always be the same. I claim that if an operation can be done through the vagina safely

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it can be done safely from above. If it cannot be done safely from above, neither can it be from below. On the other hand, you can complete an operation from above that you cannot from below.

Dr. William M. Polk, of New York.—I consider this discussion the most important one which this Society has taken part in for many a day, and the most important one which will come up for many days to come, for the reason that we have presented to us for settlement, in a measure, the greatest remaining question in gynecology. Naturally, there will be some questions arising as long as medicine and surgery exist. But in the matter of operative work upon the uterus and appendages, the infrapubic direction of approach *versus* the suprapubic is up for judgment. Now, it is not to be supposed for one moment that it will be settled by this discussion; all that we are here for to-day is to endeavor to throw such light upon it as our individual experience will warrant.

Having belonged to the class of operators represented so ably in the remarks made by Dr. Baldy, I concluded to make a sharp turn solely for the purpose of satisfying myself of the feasibility of the infrapubic route, and I trust, Mr. President, that I shall be pardoned for using the personal pronoun, since it will be necessary in relating personal experience.

Now, unquestionably any man can do infrapubic work better if he has first had experience with the suprapubic, and I take it for granted that this infrapubic method would not have had its revival if it had not been for the magnificent work accomplished from above. The ideal position for the surgeon in working in the pelvis is unquestionably that which can be obtained by Trendelenburg's posture, and anyone who has accustomed himself to do work in that way will be very loath to undertake to do it from below, unless he confines himself solely to that bad class of cases which we have mostly in mind when we come to consider the infrapubic. But if we broaden the field and include cases which heretofore have been attacked only from above, I think that we shall approach nearer the true basis of the question. Dr. Jacobs and others will, I trust, pardon me if I endeavor thus to broaden the discussion.

I. None know better than the members of this Society the

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amount of work and literature expended upon the treatment of adherent and displaced uteri, etc., by the Schultze method, by hot water, by tamponade, etc. But such things have been left behind. Simple incision by the vaginal route and the introduction of two fingers into the cul-de-sac will do away with all that kind of procedure and absolutely wipe them from our text-books as proper measures to be adopted. I take it that this cannot be gainsaid, because it is a self-evident fact.

II. The next point relates to the conservation of diseased appendages by removing diseased structures and leaving healthy portions in the manner which has been considered by many of us on this side of the water as feasible. This is a difficult procedure if you attempt to do it through the posterior vaginal fornix, but there is no doubt that you can do it in many cases if you will work through the anterior fornix, between the vagina and bladder, where you can bring the appendages within reach. Now, mind you, this is applicable solely to cases in which you propose to do this conservative work, which certainly brings us admirable results. It is quite true that in many cases you can bring the appendages sufficiently well down posteriorly to do the work satisfactorily, but my experience has been that in about fifty per cent. of the cases, owing to fixation of the uterus and adnexa in the upper part of the pelvis, the method will be disappointing. They can all be reached through the anterior fornix.

III. Next, with regard to the treatment of small ovarian growths, which are comparatively free from adhesions and are situated mainly in the pelvis, their removal by the infrapubic route is one of the simplest problems in surgery. I do not think that it can be said that it is one of the simplest problems in surgery when you attempt their removal from above, notwithstanding that the mortality is so low. It is simpler work from below than from above.

IV. Next we come to cases of disease of the appendages, such as hydrosalpinx, hæmatosalpinx, and pyosalpinx. When these conditions exist removal is the proper course. I take it that while some may dispute the following proposition, a great many will stand by me in saying that if you remove the appendages of a woman it is just as well to take out the uterus at the same time.

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Now, this class of cases constitutes a large part of those falling within Dr. Baldy's category; besides, there are those represented by ovarian and pelvic abscess with consecutive layers of exudate, the result of repeated attacks of inflammation. The mass may be matted to coils of intestine, possibly to the bladder and pelvic walls. Now, in dealing with all the above conditions, hysterectomy is the proper course. I think that it is wise, however, to separate them into different classes. First, there may be a condition of things which resolves itself into the simplest kind of vaginal hysterectomy. The tubes and ovaries may be diseased as to make them practically useless, and yet they may not be sufficiently adherent to surrounding structures to render their removal at all difficult. When, however, it comes to dealing with another class, the universally adherent adnexa, with suppurative infection present, it seems to me that those who do vaginal hysterectomy make a mistake if they always attempt to perform at once the radical vaginal operation in all of these cases. A partial operation, the evacuation of the abscess in the first place, so as to get the patient as far as possible from under the influence of purulent infection, from which so many of them suffer, this step to be followed subsequently by the radical procedure, is, in my experience, the wiser course to pursue. And working along this line, I do not believe that the mortality will be even as great as that which has been mentioned by Dr. Jacobs.

V. Now we come to the class of cases enumerated by Dr. Baldy in his paper yesterday, those of puerperal infection. These form one of the most interesting varieties that come before us, for the simple reason that we are in a quandary with reference to any kind of procedure; mind you, I do not mean puerperal cases which can be met by ordinary cleansing of the uterus. I mean those in which we recognize the advance of sepsis to the point where it becomes a question between the vitality of the patient upon the one hand and of the poison upon the other, and, so far as ordinary treatment of the interior of the uterus is concerned, it has been tried and has been found wanting. What, now, are we to do? I think that we must admit that these are cases in which, should we decide to do an operation, the line of procedure may be followed which has been suggested by

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Dr. Henrotin—remove through the posterior cul-de-sac all the offending appendages, if they are at fault, or remove the uterus. This is the route which, in the condition in question, will certainly furnish us opportunity to do work with less risk to our patient than if we approach from above. I think that all must admit that the operation from below causes less shock than the operation from above. In a woman recently delivered, with a vagina which has the relaxation incident to the changes accompanying pregnancy and parturition, the uterus can be removed through the pelvis in the shortest possible space of time, in much less time than from above.

VI. I shall now simply say a word with reference to a point made by Dr. Henrotin in his paper touching the value of exploration. We recognize exploration as one of the most important means of diagnosis in various obscure pelvic diseases.

Assuming that the condition is one which cannot be reached from below, as where there is a mass completely filling up the entire pelvis, then a suprapubic opening may be necessary. But taking the average case which comes before us for exploration, there can be no question of the advantage possessed by the infrapubic approach over the suprapubic. Even the iliac fossa can be reached in many instances.

But the point especially emphasized by Dr. Henrotin is the value of this route in treating the early stages of inflammation of the uterus and its appendages, when we have reason to believe that the disease has extended beyond these organs and invaded the peritoneal cavity. I think that not only this Society, but also the profession at large, owes Dr. Henrotin a debt for bringing this point out so strongly in his paper. We had all been in the habit of incising these masses after they became encysted, after they became abscesses. But Dr. Henrotin's proposition makes it possible for us to prevent their resulting in abscesses, and brings inflammation of the pelvis before us on the same level as inflammation of subcutaneous connective tissue, showing that we can, by operation, prevent the destruction of the appendages. This proposition enables us to limit to a great extent the necessity for the operation devised by Péan and so brilliantly carried out by our friend from Brussels.

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Now, one word more and I shall have finished. It relates to the treatment of fibroid tumors. Dr. Sutton could have removed any of those large tumors, excepting, perhaps, this largest one, by the infrapubic route, and I consider it an enormous advantage to remove such tumors from below. And in this connection I wish again to draw attention to the fact that while we acknowledge in the fullest and freest manner possible the brilliant work of the gentlemen who have perfected the technique of this operation upon the other side of the water, yet, here in our midst, we have one who made it possible for that work to be done even by them, and that the rules which he has laid down for attacking these tumors within the cavity of the uterus apply to removal of the uterus *in toto*.

Regarding one point in the technique of the operation, we know that there are two methods of doing this work—one by clamp, the other by ligature. My own experience and observation of the work of others have led me to the conclusion that whenever you have to work deep in the pelvis you require all the room which can be obtained, so that with the vagina full of forceps, or even one-half or one-third full, it becomes very difficult to manipulate. The suggestion which I have to make in this connection is that, whenever you have a case which is likely to make it necessary for you to work deep in the pelvis, you should endeavor to secure all the bleeding points low down by means of ligatures, leaving the use of clamps for the higher vessels in the later stages of the operation.

Dr. S. C. Gordon, of Maine.—I have worked both from above and from below. My experience from below has been limited, but as far as it has extended it has not been gratifying to me. I am perfectly willing to concede to Dr. Jacobs and to the men who operate as he operates most unbounded praise. He certainly has presented a list of cases here which commands my admiration. The results have been gratifying, and had we been told of them ten years ago we would have said that these are the deeds of Baron Munchausen. We could not possibly believe it. But now I believe everything that he has told us to-day. Yet I shall adhere to my suprapubic operation as a rule. I think that we cannot do as well by touch as we can by sight. I believe, with

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Dr. Baldy, that we can make our diagnosis better from above than we can from below. I believe, also, that when we have once entered the abdominal cavity we can do anything that can be done from below, and that with our improved technique, with our very much enlarged experience, we can do as good work from above as can possibly be done from below.

There is an objection to pulling down the ovaries and examining them, as Dr. Polk has suggested, whether it be done from in front or behind. But I like the doctor's suggestion of pulling them down in front very much better than from behind, because if you do draw them down from behind and find that you do not want to remove them, you have done something which you cannot possibly repair; you have a prolapsus which you cannot overcome.

I can understand that there are a good many things which can be done by men who are performing infrapubic work which others cannot, but I cannot conceive from my little experience how you are going to disentangle all the adhesions to the intestines, to the bladder, and to everything else. Then there is the point made by Dr. Baldy, that when there is fistula already existing you can repair it so much better from above than from below. You could not drag down the perforated rectum at the sigmoid flexure and repair the fistula as I have done through the abdomen twice within the last two weeks. So it seems to me that the advantages are decidedly in favor of the suprapubic operation.

Dr. W. Gill Wylie, of New York.—I rise with some diffidence because, first, the time is limited, secondly, I have for so long a time been among those who have attempted to make the suprapubic operation a success in this country that it would seem like heresy if I should desert that method. And I am very glad to say that I do not feel that I am deserting it, although I have been impressed with the fact, not alone by Dr. Jacobs's work, but also by personal observation, that the only way to settle the question of the choice of routes is to study the particular case before you. I do not accept his statistics and similar ones in France and in this country as evidence that suprapubic operations have been less successfully done. I have nothing very positive to offer, except to make a personal statement in this manner, that

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in my first fourteen supra-pubic operations for salpingitis I lost three; in my first fifty two more, making five; but in my last sixty-seven cases I lost none, and I think that there were very few accidents, such as hernia, because I take great precaution to prevent them. I would not now expect more than one per cent. mortality in private practice, nor more than three per cent. in Bellevue, where we get the worst cases. I have never yet seen a single case in which I have had to abandon the operation on account of adhesions around pus-tubes, abscesses, etc.

I confess that my experience with the infra-pubic operation is not very great. It includes seventy-four consecutive cases with only one death, but fifty-five were for cancer. The one death was from Bright's disease, the kidneys being found small and contracted. This was not known before the operation, so that the death could hardly be attributed to the operation. Therefore my infra-pubic work has been better, so far as statistics are concerned, than my supra-pubic work, but I do not believe that it would be as good had it included all the cases which were operated upon from above.

I believe that the question of choice of routes is to be settled in the future. A man gets accustomed to an operation, and being successful adheres to it. There is no doubt that one doing general surgical work will, when called to a case, prefer the abdominal method, while the gynecologist may prefer the vaginal. I consider the vaginal operation much more difficult where the adhesions are high, and I doubt whether I shall ever adopt it under those circumstances; but where the adhesions are low it is less difficult. There are other questions, such as the advisability of taking out the uterus in given cases, which can only be settled by time and a study of the ultimate results.

DR. JOSEPH E. JANVRIN, of New York.—It is somewhat presumptuous for me to attempt to discuss the question when I must confess that, so far as the vaginal route is concerned, I have had no experience except in such cases as I could remove the uterus *entire, i. e.*, without morcellation. I have, however, had a pretty wide experience in the removal of the cancerous uterus by that route, an experience dating back ten or twelve years. These cases Dr. Jacobs brings forward as the first in his list,



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and as pre-eminently fitted for that operation. I believe that any growth, whether cancerous or otherwise, which can be removed *entire, i. e.*, without morcellation, *per vaginam*, should always be removed in that way. Having had no experience in morcellation, I have nothing to say upon that point. I had a case last year of sarcomatous uterus which measured 6½ by 4⅝ by 3½ inches, which I removed entire *per vaginam*. I have also removed quite a number of uteri with small fibroids attached, similar to the ones presented by Dr. Sutton, the fibromata being intra-mural, extra-mural, or subperitoneal, and considerably larger than a hen's egg. Now, all of those cases can, of course, be operated upon through the vagina without morcellation.

With regard to removal of the cancerous uterus, this rule has always guided me, and I believe that it is not only a safe, but an absolutely justifiable one, namely, that when a uterus, cancerous or sarcomatous, cannot be removed through the vagina without morcellation, there is usually so much infiltration of surrounding tissues in such a case that it should not be removed at all. I have never met with any cases of cancerous uteri which demanded the supra-pubic operation. Possibly I have been fortunate in the cases which have come to me, but such has been my experience. I thoroughly believe that where *the uterus can be removed together with all the disease* it should be taken out *per vaginam;* that all other cases where the glands have become infiltrated should be let alone, and the supra-pubic operation should not be resorted to in these latter cases simply for the reason that the operation cannot be made a *radical* one.

Dr. Jacobs spoke of the vaginal operation in extrauterine pregnancy, and made the statement that usually in these cases the other tube is also diseased. I presume it will be remembered that just nine years ago I had the pleasure of reading a paper at the meeting of this Society in Washington, supplemented two years later by another paper upon the same subject, in which I was bold enough to make the statement that I had recognized tubal pregnancy as early as the fifth and sixth weeks of gestation, and before rupture had occurred, and in my first paper, although I had no cases to report in the way of operations, I recommended abdominal section for the removal of the tube

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with its contents. The paper received rather a cold reception. The suggestion, I have no doubt, was considered somewhat presumptuous at that time. Of course all had recognized the propriety of operating upon cases in which there was intra-abdominal hemorrhage. Since that time I have reported quite a number of cases in which I have removed the tube and fœtus entire through the abdomen, that is, before rupture. Now, I do not know that any of those patients have conceived subsequently; I know this, however, that I examined the other tube at the time of the operation, and, judging simply from inspection, it was not diseased. The patients are still living and are in good health. Therefore I would say that in tubal pregnancy, recognized at an early stage, there should be no disease in the other tube, and, such being the case, the removal of the uterus together with both tubes, as recommended by Dr. Jacobs, is entirely unjustifiable.

Dr. Beverly McMonagle, of San Francisco.—I have only to thank Dr. Jacobs for his very interesting paper. Perhaps I may not have understood all of it exactly as I should have. If I draw any conclusions from his paper which are not in accord with its construction I trust that he will kindly correct me. I understood him to say that he would remove the uterus in salpingitis, etc., where there was no pus. It has been a principle with me for a long time to preserve those ovaries and tubes which had nothing more the matter with them than an inflammatory process, with some swelling and adhesions, and I have had experience enough to convince me that such cases can be cured by opening the abdomen from above or from below, although I have had no experience with the vaginal method; and I wish to say that I do not think that it is justifiable to remove the uterus for salpingitis, etc., without pus. In cases in which there is pus the procedure is justifiable, whether carried out from above or below. It is, no doubt, always a matter of personal judgment with the operator as to which route he will choose. When the results of cœliotomy are so good as in the hands of such operators as Drs. Baldy, Polk and Kelly it is hard to persuade those men to operate *per vaginam*. However, Dr. Polk has made a sharp turn, and is getting good results by the latter method.

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There is a class of cases in which it would be difficult to operate by the vaginal route. As an example, a patient came to me with a good deal of pus in the tubes and effusion into the pelvis. I decided to open the abdomen, and having done so I found that the adhesions were very extensive on the right side and about the head of the cæcum, including the diseased appendix. I was able in that case to free the adhesions, to remove the diseased ovaries, tubes, and appendix without leaving a fistula. Now, to operate from below in such a case must result in causing a fistula of the intestine. Out of 72 cases of abdominal hysterectomy I have had intestinal fistula occur in none, so that I must agree with Dr. Baldy that one can guard against and treat this accident to the intestines better from above than from below.

I wish to say also, with regard to cases of acute and chronic salpingitis without pus, that Dr. Henrotin has indicated a way which will make it easier to save these patients. On the broad principle that a cellulitis anywhere can be incised and drained, so in cellulitis around the uterus and in salpingitis and oöphoritis, one can incise and drain, and thus avoid many pelvic diseases of a chronic nature. But these cases do not always come to us in time, so I think that the gynecologist will keep on, as in the past, in treating cases in which pus has already formed, and I fear that the rosy complexion given to the subject to-day by Dr. Polk will not be permanent.

Dr. William T. Lusk, of New York.—I think that we ought to congratulate ourselves that we have two methods, which are not to displace one another, by which to operate upon our cases. And I am sure that all of us will agree within another year that fibroids of medium size, that all cases in which the pelvic organs are not matted together and the uterus and tubes have to be removed at the same time, as well as all cases of carcinomatous disease, should be operated upon from below. As to whether a probable unilateral pus-tube which does not require removal of the uterus shall in the end be removed from below is a matter of question in my mind. I am sure that we would all like to carry out as long as we live the principle which Dr. Polk has laid down with regard to saving the appendages, and it seems to me that we

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shall save the uterus and a healthy tube and ovary more often in operating from above than in operating from below.

With regard to extrauterine pregnancy, I have operated in a large number of cases, and I think that there is no class of cases in which the uterus and remaining tube are so apt to be in a healthy condition and to remain in a healthy condition. I do not recall an operation performed for tubal pregnancy in which the patient has not remained perfectly well with the other tube and uterus, with one exception, that of a patient who had carcinoma three years after the operation, with which, of course, it had nothing to do. I think that it was a mistaken assertion in Dr. Jacobs's paper that the uterus and tubes must come out when we operate for tubal pregnancy. And if we are going to leave the uterus and tube, I am sure that we shall do better work from above than from below.

When we look over statistics, those of Richelot and others, amounting to six hundred cases or more, we must remember that they include in them their later results. I think that we should all bear in mind that we are dealing with human beings, and that in changing from one method to another we begin with simple and easy cases. As our experience increases—and I speak this because the general practitioner is the one now who pushes us, who wants an operation in every case of supposed sepsis, and who wants it done through the vaginal route—our cases become more varied, and it is little by little that we reach the great results obtained by Jacobs, Péan, and others. The majority of operators with whom I talked in Europe—it is certainly so with Martin and other men whom we respect—still prefer the abdominal route.

I would like to say just one word with regard to the class of cases in which the operation is to be performed, because so much has been said about operating from below in those in which there is pus. This week I was asked to see a case with a view to taking out a pus tube which was slowly pouring poison into the system. This was about four weeks after confinement. I found what we term cellulitis. There is moderate induration, temperature of 99.5° F. in the morning and about 102° in the afternoon. And I can say without reserve that if that woman is treated in

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the ordinary way she will get will. I have told the family so, but have said that if they want an operation it can be performed, and the patient will in that way get well, too. But what would we do if it were a member of our own family?

And when I talk to the family physician I find that he has peculiar notions. I find that where patients have pain he feels that he must not give opium because it masks the symptoms; that he must not give an antipyretic when the temperature rises in the afternoon, because that masks the symptoms. What that means, I do not know. He must not use a blister. He must not use alcohol. He must give something which kills bacteria in the blood, as a dose of icthyol every few hours to prevent the development of streptococci in the blood until the patient is ready to be operated upon. Now, I think that in this class of patients we must remember that 96, or 99, or 100 per cent. of them get well if they are left entirely alone, and that when we do an operation a great responsibility rests upon upon us.

Dr. H. C. Coe, of New York.—Dr. Lusk has just referred to a vital question, our relation to our private patients It is one which we usually lose sight of in society discussions. This point has recently been impressed on my mind by the fact of three patients within the last few weeks demanding that I do the vaginal operation instead of the abdominal. It was that operation or none at all. Patients are becoming educated in gynecology, as well as specialists themselves, and a great many are absolutely declining to have cœliotomy. If we assure them that we can obtain the same result without performing cœliotomy, they will submit to the necessary operation.

Dr. McMonagle touched upon a most important point, the frequent complication of disease of the adnexa with appendicitis. It must have occurred to you all to find in a considerable proportion of cases firm adhesions between the appendix and the right tube or ovary. This complication is certainly not clearly recognized during the vaginal operation. It is a dangerous source of subsequent trouble. In some cases we are able beforehand to make a probable diagnosis of appendicitis complicating pelvic disease, and here we must certainly resort to the supra-pubic rather than to the vaginal operation.

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No one has touched in the discussion upon the subject of so-called secondary hysterectomy, which I think is very important. I have had occasion to entirely revise my ideas of extirpation of the uterus in disease of the adnexa, from having to remove this organ in four or five patients during the past winter from whom I had removed the appendages two or three years previously. They were cured only after the second operation, which is a good clinical proof that the uterus was the source of the persistent trouble. The removal of the uterus in these cases by the vagina is a very simple procedure.

While I am by no means an enthusiastic believer in the universal application of the vaginal operation, it seems to me that it has a distinct field of usefulness.

Dr. Ely Van De Warker, of Syracuse.—This day has been marked by one most important paper of a series. I do not want to make comparisons which will belittle any of the brilliant papers read before us. The paper of Dr. Henrotin, which has been so eloquently indorsed by Dr. Polk, by a strange coincidence resembles my own, which I trust I shall have an opportunity to read. It touches upon the very topic which Dr. Henrotin brought out in his. I have had some experience in that direction, viz., vaginal incision through pelvic masses, and gauze-drainage, obtaining excellent results; in some cases secondary to cœliotomy for the removal of pus-tubes and ovaries, or for breaking up masses of adhesions and enucleating appendages, without benefiting the patients, in some instances making them worse. Some of those cases were my own, some came from other operators. I can, therefore, offer my own individual testimony strongly in favor of that method of secondary work. Ideally we ought to remove the uterus itself, which has become superfluous and a source of trouble, not of itself, because I regard the uterus as really the most inoffensive organ in the female pelvis, but because it has become imbedded in a mass of adhesions, and possibly had better come out if we decide to remove the tubes and ovaries according to the method which Dr. Jacobs practises. But if we do not do that, we have a substitute in the method of incision into the pelvis and drainage, as suggested by Dr. Henrotin, and I can personally testify to the value of that procedure.

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DR. CHARLES JACOBS spoke in French, DR. HENROTIN acting as interpreter. The progress of gynecology in America, he said, had been so much greater than in Europe that he felt himself amply repaid for his visit. The discussions were much more interesting here, for the reason that the profession was far ahead in this variety of work in America than in Europe. In the latter country surgeons were so slow to adopt new procedures that they were still discussing the propriety of doing hysterectomy at all. They had arrived, in other words, only at the point which Americans had reached three years ago.

He did not believe that abdominal work could give as good results as vaginal. If one would follow his patients for months, for a year, for five years, he would find that those who had not had the abdomen opened, who had no scar, were better off both mentally and physically than those who had. The mental condition of the woman who had been operated upon by the vaginal method was better.

Dr. Jacobs closed by expressing his heartiest thanks and his kindliest feelings for the warm reception which he had received.

DR. HENROTIN.—I do not wish to question the value of vaginal hysterectomy for suppurative disease, for I believe that I was first to perform such an operation in this country—in 1891—and I published a paper in 1892 in which I expressed views which I hold to-day. And I remember the discussion which I had with Dr. Baldy and Dr. Krug in Chicago three years ago. Many have had to come to the vaginal method after all, although Dr. Baldy has not. At that time it was still a question whether hysterectomy ought to be done. Now, hysterectomy is recognized as a proper procedure in selected cases. But let us not go too far. Let us not go wild on this particular fad, whether we operate by the vagina or by the abdomen. Regarding suppuration high up in the pelvis, there are gentlemen who say that they are curing these patients by the abdominal route. I do not know. I want to say this, however, that there are patients in different hospitals, suppurative cases—I saw one last winter—staying there, too sick to go out. They are hectic; there is a little pus running out of the groin or somewhere; and yet they remain without operation. Is it not true that in large, crowded hospitals you

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are likely to have one, two, three, or four women with a suppurating sinus in the pelvis, communicating, perhaps, with an abscess, and the rectum, and keeping the patient in an emaciated condition? I would say for the French that their statistics are made up almost entirely from that class of cases inthe public hospitals. Cases are reported here by Baldy, by Kelly, by Baer, by Krug, but their cases are, to a great extent, selected ones. They come to the most perfect surroundings and the best operators. Now, I would give a good deal if I could induce Baldy, Kelly, Baer, and Krug to try the vaginal operation in their beautiful hospitals, and see what they could do. They do not realize themselves the possibilities of this operation.

So far as the vaginal operation is concerned, we should understand that it is not intended for show. It is a hard operation to perform in certain cases, and sometimes it does not impress you as being particularly surgical. In extrauterine pregnancy it is particularly to be condemned. That is my opinion. I believe that in nineteen cases out of twenty the other side is healthy when patients are seen early, and the best method is to go in through the abdomen and see what to do; to take out the uterus through the abdomen, if you think it is proper to take out the uterus at all. Many men have opened the abdomen and found that they could clear out the diseased side and leave the other side perfectly healthy, and I believe that is best.

Regarding operative work of a conservative kind, I have pulled the tubes out of the abdomen and I have pulled them out of the vagina, and I would a good deal rather do the former. But there is a rule which should guide us even here, and it is this: If you have a pus tube on one side and apparently a healthy one on the other, the proper route, in my opinion, is the vaginal. I recall a case in which I thought that both sides were diseased, for the induration was diffuse. I was asked by the doctor to do vaginal hysterectomy, as the patient desired it; and as she had been very sick and had given him a great deal of trouble, he insisted on the radical operation. I made a posterior vaginal incision with the intention of doing hysterectomy, but upon emptying and draining an abscess I found the tube healthy on the opposite side, and left it with the uterus. This was over three

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years ago, and I have received a photograph of a baby born since the operation. This shows that you can do conservative work through the vagina as well as through the abdomen, but that conservative work does not consist in bringing down the ovary and tube and mending them. When you expect to do that, and when you have no abscess, so that drainage is not necessary, you can make a small opening in the abdomen and do conservative work in that way; but if there is pus, reach it through the vagina, remove the affected tube and ovary, and leave the healthy ones.

DR. WATHEN.—In my paper I emphasized the fact that all cases are not operable *per vaginam*, and referred to appendicitis and extensive adhesions high up as contra-indications. One of the great difficulties is to decide just when the case is operable, and it is not probable that we shall ever be able to decide this positively in every instance. I emphasized the ease with which abscesses in the broad ligament and abscesses from encysted peritonitis could be opened and thoroughly drained without exposing the peritoneal cavity. With regard to the mortality of these operations, the future will show statistics in favor of vaginal hysterectomy which do not exist to-day. For instance, I quoted from Richelot that his mortality had been over four per cent., but in his last series of one hundred and twelve cases, which include many complicated cases of pelvic suppuration, and of large myomata removed by morcellation, he had no mortality—one hundred and twelve consecutive cures. It must be remembered that the more favorable cases have heretofore been reserved for cœliotomy, while the worst ones were operated upon through the vagina. In future, when we know better how to select our cases and adopt the best technique for vaginal hysterectomy, we may expect a mortality lower than any yet recorded in cœliotomy.

Dr. Polk is too sanguine in his anticipation of the preventive or abortive value of early vaginal incision and opening and draining the broad ligaments in septic or specific infection before suppuration. I called attention in my paper to the preventive value of such incision before suppuration, when the infection is conveyed to the cellular tissue in the broad ligaments through the lymphatics, and is practically localized there. It will be of

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little use if there is systemic invasion by pathogenic bacteria or the products of bacterial growth. Nor would it be of value when the infection is not in the broad ligaments, but has extended through the uterus or the tubes to the peritoneum, causing local or general peritoneal infection, or is localized in the tubes.

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# THE TREATMENT OF PUERPERAL ECLAMPSIA.

By Thaddeus A. Reamy, M.D.,
*Cincinnati.*

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This paper, like the one which I last had the honor of presenting to this Society, is purely clinical—the simple recital of a few cases coming, within a given time, under my own observation, including also some experiences of friends. No attempt is made to quote the literature of the subject. Nor is the general treatment (prophylactic, obstetric, and otherwise), discussed, my chief object being to still further emphasize the value of veratrum viride in the treatment of eclampsia.

The number of cases is small, owing to two facts: First, I have during the past eight years refused general obstetric practice; second, the relative number of cases of eclampsia occurring in Cincinnati and the vicinity is smaller than in some other localities. This observation applies to hospital as well as to private practice.

These cases are presented with sufficient detail to bring the clinical picture before you that you may be able to judge of the relations between treatment and results. In this way only can clinical lessons be instructive.

Case I.—January 10, 1888, I was called by the late Dr. John Rendigs to see Mrs. T., whom he had delivered of a male child three hours before. The patient was a robust German woman above medium height, muscular, a blonde. This was her second confinement. She had been in perfect health prior to labor. Dr. Rendigs informed me that examinations of the urine during the month previous had shown it to be normal.

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The presentation was vertex. The labor was rather rapid, delivery occurring within two hours after the first pain. The placenta was promptly delivered. Twenty drops of fluid extract of ergot administered by the mouth as soon as the placenta was delivered. Half an hour after delivery, as the doctor was about to leave, the patient complained of frontal headache. She said that she could not see objects at the opposite side of the room. The pulse was found to be 110, strong. She was seized with a convulsion, which was violent and of long duration. The tongue was bitten. As soon as she could swallow she had twenty grains of potassium bromide. Within half an hour another seizure, which proved even more severe. The succeeding unconsciousness was prolonged, stertor loud. Pulse 115, very strong. When I arrived she was in the midst of the third convulsion. So violent and prolonged was this attack that death from asphyxia seemed imminent. At the close of the struggle the pulse was 110, full. Within ten minutes it was 125 and of great force. I gave hypodermatically twenty drops of Norwood's tincture of veratrum viride. The patient was yet unconscious. Within twenty minutes the pulse had fallen to 106, was not so full. Fifteen minutes later the pulse was 70, soft, and compressible; respiration, 16. Urine passed in bed. Patient remained quiet for an hour, when she became restless, and the pulse went up to 90 with more volume. Gave veratrum hypodermatically. Within twenty minutes the pulse was 70. Twenty minutes later pulse had fallen to 40, soft, but regular. Most profuse perspiration; conscious.

An hour later the pulse was 50, the patient cheerful and quiet. Bladder emptied by catheter so as to examine urine, which contained only a trace of albumin.

The patient went on to rapid convalescence. No albumin in the urine after the fifth day.

CASE II.—C. F., admitted to my service in the Cincinnati Hospital July 7, 1890; Dr. Lincoln Mussey, interne, in charge. Patient a well-developed brunette aged eighteen years, unmarried; missed menstruation about October 25, 1889. Abdominal enlargement equal to eight months' gestation. Fœtal heart distinct in the second position. General health good; feet, however, swollen. Urine, thirty-six ounces in twenty-four hours; no albumin.

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From July 12th to August 1st the urine contained from 3 to 5 per cent. of albumin, and occasionally the quantity of urine was below normal. Patient meantime was largely on milk diet, with diuretics. Occasionally the hot pack.

Labor commenced at midnight August 1st. Dr. Mussey in attendance. Patient suffered from some headache. Presentation was second position of vertex. Labor progressed well, and at 7 A.M., August 2d, spontaneous delivery of a healthy female child, weight 7.5 pounds, occurred. Uterine contractions good; placenta delivered within fifteen minutes. Perineum slightly lacerated; two stitches inserted.

5 P.M. Rested well all day. Urine drawn by catheter, slightly albuminous, no casts, quantity normal. Patient has severe headache. Ordered thirty grains of bromide of potassium, to be repeated, with chloral, if headache continues.

1 A.M. August 3d. Has not slept. Headache severe. Urine passed voluntarily. Bromide of potassium and chloral repeated.

3 A.M. No sleep; restless. Ordered five grains of phenacetin.

5.45 A.M. Fifteen minutes after taking phenacetin fell asleep, which has continued until now. Says that she feels well, but ocular symptoms marked. Eyes turned upward. A most violent convulsion immediately occurred, followed by profound unconsciousness, with loud stertor. Pupils active; no deviation. Pulse 84, full and strong. Ordered twenty grains of hydrate of chloral by the mouth.

6.45 A.M. Another convulsion still more severe, lasting two minutes; tongue bitten. Cyanosis profound. Pulse 110, full, strong. As soon as consciousness was restored, chloroform inhalation commenced. An enema of glycerin in solution of salt-water was administered, soon followed by a copious stool. Urine passed unconsciously. Administered in butter, calomel, and bicarbonate of soda, each ten grains; croton oil, one drop.

Chloroform inhalation continued at intervals.

8 A.M. Another violent seizure, lasting three minutes. After the convulsion ceased patient seemed to be dead for a time. Period of unconsciousness prolonged. Pulse 102, full and bounding. Administered another enema. Bowels freely moved. Was also put in hot pack.

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10 A.M. Dr. Reamy arrived. Patient unconscious. Stertor loud. Pulse 102, unusually strong, carotids throbbing, pupils unequal, cyanosis marked. Ordered chloroform discontinued. Norwood's tincture of veratrum viride, twenty drops by the mouth. Ice-bag to head.

11 A.M. Pulse 99.

11.40 A.M. A slight convulsion. Just before this attack she passed, spontaneously, about sixteen ounces of urine.

1.30 P.M. Pulse 102, full; unconscious, but stertor not so marked. Color of face better. Administered fifteen drops of tincture of veratrum viride.

2.20 P.M. Quiet. Twenty drops of veratrum, as pulse had not been affected.

2.40 P.M. Repeated twenty drops of veratrum.

3 P.M. Temperature 100.4°. A violent convulsion. As soon as she could swallow, though still unconscious, she was given thirty drops of tincture of veratrum viride.

4 P.M. Pulse 92, softer. Resting quietly.

4.30 P.M. Fifteen drops of tincture of veratrum.

5 P.M. Pulse 76, soft.

6.45 P.M. Slight convulsion. At its close passed urine copiously. Pulse 80. Gave thirty drops of tincture of veratrum viride.

7 P.M. Quiet; semi-conscious; pulse 72, soft.

7.30 P.M. Conscious. No stertor. Pupils equal.

9 P.M. Pulse 54, soft, regular.

11 P.M. Pulse 60, soft; ordered ten drops of veratrum.

August 3d, 8 A.M. Slept all night. Has taken milk, passed urine, albuminous trace. Pulse 66, soft; temperature 98.6°.

10 A.M. Pulse 66, soft.

This patient's convalescence from this time on was uninterrupted, except that she continued to suffer from more or less headache. She was kept for several days under the use of ten-drop doses of tincture of veratrum three to four times daily. She was discharged from the hospital in perfect health September 3d.

CASE III.—February 23, 1889, saw in consultation with her family physician, the late Dr. Agin, Mrs. T., aged thirty-four.

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She had been delivered at term, by Dr. Agin, of a healthy male child eight hours before my visit. This was her third confinement. This labor had been tedious and unusually painful. An hour after delivery she had been seized with a violent convulsion, followed by prolonged unconsciousness, with loud stertor.

Notwithstanding the fact that she had taken chloral and potassium bromide in full and repeated doses, and had chloroform inhalations almost constantly, except during the convulsions and the first moments of succeeding unconsciousness, she had suffered from four seizures, and the fifth occurred within ten minutes after my arrival. This was a most desperate one, the tongue being badly lacerated. The following unconsciousness lasted half an hour, and was profound. Pulse 110, but only moderately strong. Temperature 100°. Pupils slightly dilated. Urine, obtained by catheter, showed about 6 per cent. by bulk of albumin.

I administered hypodermatically three-quarters of a grain of sulphate of morphine. Within twenty minutes after the morphine was administered her breathing was normal, the pupils normal, pulse 80, soft, but fuller. She now passed into apparently natural sleep, which on my return, I was informed, had lasted eight hours, when she awakened, asked for water, and was given milk, then she again went to sleep, from which she did not awaken for four hours longer.

Recovery was rapid and perfect. Albumin in small quantities was shown in the urine for three days, when no trace continued.

Morphine was given in this case instead of veratrum, because the patient was of an exceedingly nervous temperament, had suffered an unusually severe labor, the pulse being weak and the pupils dilated. Notwithstanding the fact that the first seizure did not come on until after delivery, I considered the case as one of reflex origin.

Case IV.—December 24, 1890, I was called to see Mrs. G. S., whom I had been engaged to attend in her first labor. Her computed time was December 16th.

She was a blonde, small of stature, but well developed and muscular. The urine had been examined frequently during the previous two months and found normal. An examination made three weeks previously had shown pelvic measurements satisfac-

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tory, child alive, vertex presentation. When I was called she had been in labor about two hours. Dilatation to size of a silver dollar. Pains fairly good. She had headache; pulse 80, strong. Bowels constipated. Urine contained about 7 per cent. of albumin by bulk. Quantity of urine about normal.

A glycerin and salt-water enema was at once followed by a copious stool. Urine was also passed. After the bowels were evacuated, thirty grains of chloral hydrate, dissolved in milk, were given by enema. This was retained. Pulse was now 90, full and strong. Temperature 99.5°. Headache somewhat mitigated. A hot pack was employed, as I had apprehensions of convulsions.

Within two hours dilatation was complete and the head pressing the perineum, though pain had not been severe. Chloroform-inhalation was now commenced, as is my universal custom during the second stage of labor. She had not yet come under the influence of the anæsthetic when, during the pain, she was seized with a convulsion which was severe, lasting nearly two minutes. Not waiting for consciousness, the chloroform was pushed, the short forceps applied, and delivery speedily effected, the patient meantime unconscious. The perineum was not injured. The child, a male, was resuscitated with some difficulty. Good uterine contraction with speedy delivery of the placenta followed. Pulse 80, not very full. Temperature 99°.

Half an hour after delivery she had intense headache, pulse 100 and strong. She was restless; ocular symptoms manifest. I gave hypodermatically twenty drops of Norwood's tincture of veratrum viride. No sooner was the injection completed than she was seized with a convulsion more violent than the first. After this attack cyanosis was alarming. Very loud stertor. Pulse 120, full and strong. Repeated injection of fifteen drops of veratrum. Within twenty minutes copious evacuation of urine in the bed. Breathing more natural. Pulse 90, softer. Half an hour later pulse 60, soft, not so full. Free vomiting now occurred, when pulse fell to 40, soft, somewhat feeble. Copious diaphoresis followed, with evacuation of nearly a pint of urine. Extremities cold. Patient perfectly conscious. Respiration 12. Administered, hypodermatically, five-eighths of a grain of sulphate



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of morphine. Within twenty minutes the patient was asleep. Slept continuously five hours. During this time pulse 70, soft and regular, good volume.

She awakened for ten minutes, asked for water, which was given her. She then slept for three hours; moderate diaphoresis during the whole time of sleep. When she awakened pulse was 71, normal. Temperature 99.7°.

Convalescence was uninterrupted. Slight traces of albumin in urine for three days, when it disappeared.

Case V.—April 23, 1893, I saw, in consultation with Dr. Coffman, Mrs. B., who had been in labor five hours. This was her second confinement. The first had been uncomplicated.

An hour before my arrival the patient had been seized with a violent convulsion, followed by profound unconsciousness, with stertor. The convulsion had come on during a uterine contraction. The doctor had freely administered chloroform by inhalation. Labor had, since the convulsion, progressed well; but severe frontal headache, with complaint of flashes before the eyes and restlessness, caused the doctor to fear another seizure. He was all the more apprehensive because he learned that during the past week not more than twenty ounces of urine had been passed each twenty-four hours, and an examination of a specimen procured that day had shown it to be very albuminous, though the actual proportion was not ascertained.

As dilatation was now complete and the head pressing the perineum, though not distending it, she was at my request brought rapidly and profoundly under chloroform, the forceps applied, and a living male child promptly delivered. The placenta was delivered within five minutes, and good uterine contraction followed. The pulse was 80, rather full. Temperature 99°. No headache, patient cheerful, intellect unclouded. Four ounces of urine obtained by catheter showed a small amount of albumin. Microscopical examination of this specimen made six hours later showed a few hyalin casts.

Forty minutes after delivery, while the doctor and the writer were considering the plan of treatment to be followed, and when I was about to leave, the patient cried out, "Oh, my head!" and was seized with another convulsion, which proved to be most severe, and in every particular typical.

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Pulse at the wrist was now 115, very full and sharp; pupils unequal, the right more dilated than the left. I had in my pocket a supply of Norwood's tincture of veratrum viride, of which, with Dr. Coffman's consent, I injected into the arm twenty-five drops. Within twenty minutes breathing was easier, color of face better, and pulse had fallen to 95, and softer. In twenty minutes more the pulse was 60. In ten minutes more—that is, fifty minutes after the administration of the veratrum—the pulse was 37, and the patient was perspiring most profusely, with extremities cold. No vomiting. Immediately I injected subcutaneously half a grain of sulphate of morphine. Within ten minutes the pulse was 50. Within twenty minutes more the pulse was 60, of good volume, but soft. The patient was in a sound, apparently natural sleep. In this condition, an hour later, with pulse 70, I left her.

The doctor informed me that she slept tranquilly seven consecutive hours; that she awakened apparently well; that immediately upon awakening she passed a large amount of urine. From this on the secretion of urine daily was abundant. Within three days samples obtained by catheter, so as to avoid lochial contamination, showed no albumin. Her recovery was rapid and perfect.

CASE VI.—Mrs. H., aged thirty, primipara, was delivered by me at term, March 10, 1894. Frequent examination of the urine during previous two months had given negative results; quantity also normal. At the close of the first stage of labor the bladder was emptied by catheter. This urine contained a trace of albumin.

Labor was normal, though first stage somewhat prolonged. At the close of the first stage she was allowed chloroform-inhalation, and was delivered without forceps, being wholly unconscious when the head was delivered. Uterine contraction prompt. Placenta delivered spontaneously within five minutes. Temperature was now 99°, pulse 78, rather strong. No headache. No ocular symptoms.

An hour after delivery, as I was about to leave, she complained of frontal headache, was restless, and said that she could not see as well as usual. I now found her pulse to be 120 per minute and

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bounding; temperature 100°. Recognizing the peril of an impending attack of eclampsia, I gave her by the mouth twenty-five drops of Norwood's tincture of veratrum viride, and had the ice-bag applied to her head. In twenty minutes her pulse was 105 and softer. In forty minutes pulse was 70 and she was perspiring; headache gone. She now vomited, after which pulse fell to 50. Perspiration most profuse. Was given by the mouth a tablespoonful of whiskey. In an hour pulse 72, normal. No headache. Fell asleep and slept two hours. Complained of fulness of bladder on waking; was catheterized. Sixteen ounces of albuminous urine obtained. Two hours later I left her. Convalescence uninterrupted. No albumin in urine after third day.

That an attack of eclampsia was averted by the veratrum I have not the slightest doubt.

But one other case of eclampsia was seen by me within the time specified. This was in consultation with Dr. G. Taylor. The woman died of cerebral hemorrhage, as disclosed by post-mortem examination, during the second convulsion, the event occurring just as I entered the room. The post-mortem also revealed acute atrophy of the kidneys. Not more than eight ounces of urine had been secreted in thirty-eight hours preceding death.

The following summary is extracted from a private communication kindly made to me by Prof. W. E. Kiely, of Cincinnati:

Patient thirty years old, pregnant; under his charge for the third time. Has had albuminous urine for one year. This labor came on at six months. For three days urine had shown, by bulk, about 95 per cent. albumin. Œdema of feet, legs, and face. Headache.

A convulsion occurred at 11 A.M., October 25, 1894. Delivery, October 26th at 7 A.M. Had in all six convulsions. On the doctor's arrival, at 5.45 P.M., October 25th, he gave her by the mouth forty grains of sodium bromide, twenty grains of chloral hydrate, and half an hour later, hypodermatically, one-sixth of a grain of muriate of pilocarpine. As the child was dead, under chloroform anæsthesia dilatation of the os was commenced at 3 P.M., but delivery did not follow. She had two convulsions during this process, chloroform-inhalation continuing. At

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4.45 she had, hypodermatically, fifteen drops of veratrum viride. At 5.30 another convulsion, most violent; fifteen drops of veratrum repeated. Prof. W. H. Taylor now in consultation; at 6.15 twenty drops of veratrum repeated. At 7 P.M. the pulse was 26 and full. At 8 P.M. pulse 32, full. At 10 P.M. pulse 40. At 5 A.M. on the 26th labor pains were strong. She was brought under chloroform and speedily delivered by forceps. Recovery good; but she still has albumin and casts in her urine.

A very remarkable and instructive feature of this case is the safe recovery from such profound effects from the veratrum; also that notwithstanding the pulse-rate was but 26, the volume was good. This latter may explain the possibilities of recovery from veratrum depression without the use of stimulants.

Prof. W. H. Taylor (private communication) saw in consultation with Dr. Brent, of Cincinnati, a primipara aged thirty-eight years. Labor commenced at 12 M. At 6.30 a severe convulsion. Had twenty grains of chloral hydrate and thirty grains of bromide of potassium. By 7 P.M. she had another convulsion; chloral and bromide repeated. No dilatation of os had occurred. Another convulsion; comatose condition profound. By the mouth thirty drops of tincture of veratrum viride. This dose repeated four times within five hours. At 4 A.M. artificial dilatation and forceps delivery; one convulsion after delivery. Convalescence good.

Prof. J. M. Withrow reports (*Cincinnati Lancet and Clinic*, March 11, 1893) two cases of eclampsia:

CASE I.—A primipara seen in consultation with Dr. Carmichael. She had been delivered at 4 P.M. Dr. Withrow saw her at 9 P.M. She had then had eight convulsions, four of them prior to delivery and four after delivery. Those after delivery more severe than those occurring before; they were in such rapid succession that consciousness was not recovered between the attacks. She had been given full doses of chloral hydrate, bromide of potassium, and chloroform inhalations. Her temperature was 99°, pulse 140, full and strong. Thirty drops of Norwood's tincture of veratrum viride were given by the mouth,

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though she swallowed with difficulty. Within fifteen minutes she had another convulsion, very severe. Contortions violent; cyanosis profound; stertor loud. Uterus contracted and pressed violently against the abdominal wall. Fifteen minutes elapsed after the fit, and, as the pulse had not been affected by the veratrum viride, one teaspoonful of Norwood's tincture was given per rectum.

She now became restless and received, hypodermatically, one-quarter of a grain of sulphate of morphine. Pulse fell about ten beats every fifteen minutes until it reached 60 per minute—soft, regular. At 2 P.M. pulse had fallen to 48; another quarter of a grain of morphine injected. Pulse advanced to 60. At four o'clock it had fallen to 44, full and regular. Patient quiet and copiously perspiring. Pulse remained at 60. Urine albuminous. Recovery prompt and satisfactory.

CASE II.—Mrs. M. K., primipara, thirty years old. From the sixth to the eighth month of gestation feet badly swollen, but no albumin in the urine. But nine days before labor came on urine contained 25 per cent. of albumin.

She was placed on milk diet and cathartics were employed. Albumin reduced to 5 per cent., the patient voiding forty ounces in twenty-four hours. Labor normal, except that the first stage was prolonged.

When the head was pressing the perineum, dilatation being complete, chloroform inhalation having commenced, she was seized with a violent convulsion. As soon as she was quiet Dr. Withrow gave, hypodermatically, ten minims of Norwood"s tincture of veratrum, the pulse being 120 and of great force. She was then quickly anæsthetized by ether, and a living child delivered by forceps. After delivery the pulse increased to 140, temperature to 100°. In half an hour another violent convulsion occurred. She came out of it with pulse 140, very hard and full, temperature 100.5°. By hypodermic syringe she again had ten minims of tincture of veratrum. Within fifteen minutes pulse-rate was rapidly diminishing, and she was in a copious perspiration. One hour later she was given hypodermatically one quarter of a grain of sulphate of morphine. She fell asleep. Four hours later the pulse was 48; respirations, 8 per minute. This condition contin-

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ued for two hours, when the injection of five minims of tincture of digitalis brought the pulse up to 60. Recovery now went on rapidly.

Before commenting upon the cases here presented I may remark that I have good reason for believing that the veratrum administered in the case occurring at the Cincinnati Hospital was not a reliable article, which accounts for the tardiness of its action and the frequency of administration in large doses found necessary.

Nothing can be more striking than the promptness with which, in all of these cases, the convulsions were arrested just as soon as the depressant effect of the drug upon the heart was profoundly manifested, in this regard fully corroborating the observations of Fearn, Boyd, and others, especially our Fellow, Dr. Charles Jewett, as detailed in his admirable paper read before this Society, and published in vol. xii. of the TRANSACTIONS for 1887.

The power of veratrum in immediately controlling the convulsions can be comprehended when it is remembered that this agent is one of the most potent of the arterial and spinal depressants. Prof. H. C. Wood, after careful experiments, informs us that veratrum lowers the pulse-rate both by a direct action on the muscles and by stimulating the inhibitory nerves. It diminishes the force of the heart-beat by a direct influence on the cardiac muscle, and produces a general vasomotor paralysis.

If the power of this agent were limited to arresting the convulsions it would be of great value. But it goes much further. It produces copious perspiration, although its action here is perhaps not direct, but due to the profound arterial depression (Wood). A still more important action is the pronounced diuresis which follows the muscular relaxation. This was strikingly illustrated in the cases here reported. I do not know how this diuretic influence is secured. Very possibly, as suggested by Prof. McCorkle, this effect is accomplished by

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the drug overcoming the vasomotor spasm of the renal vessels. However, this effect cannot be over-estimated; for whatever views may be held as to the etiology of puerperal eclampsia, there are few who will question that toxæmia plays no secondary *rôle*, and that the kidneys stand first in the order of elimination.

In order to sustain this proposition, it is not necessary to assume that disease of the kidneys is associated with every case of eclampsia. On the contrary, we know that such is not the fact. Even severe cases occur when no evidence of kidney lesion exists. In some cases no albumin is found either before or after the convulsions, though the latter instances are rare.

Nevertheless, no one can read the learned paper of another of our Fellows, Dr. William Richardson, published in vol. iii. of the TRANSACTIONS of this Society, on the "Acute Parenchymatous Nephritis of Pregnancy," with an exhaustive report of cases, without being convinced of the important relations between diminished activity of the kidney and eclampsia.

Still further interest in this subject will be felt by any one who will read the report of Dr. Turner, pathologist, made on examination of the kidneys of a woman who died of eclampsia, in charge of Dr. Ernst Herman. (See *Transactions of the London Obstetrical Society*, vol. xxxiii., p. 338.) He says the kidneys "showed changes attributable to some toxic matter in the blood."

In another case, reported by Dr. Cutter (*London Obstetrical Transactions*, vol. xxxvi., p. 176), the pathologist reported upon the kidneys that "the changes were like those of blood poisoning rather than inflammation." No doubt the acute cerebal anæmia upon which the eclampsic attack immediately depends in a majority of cases is due to cerebral vasomotor spasm—and that this is due to toxæmia, and the toxæmia to cell-activity of the mother and of the child *in utero*. The accumulation of these toxic products can only be prevented by securing activity of the kidney, skin, and bowels.

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The removal of dangerous accumulation, when it has occurred, must be accomplished through the same emunctories.

Immediate arrest of the convulsions is an important consideration, because in those alone there is peril, and so long as they continue, the underlying causes will increase, and the danger thus be intensified. It is, therefore, most fortunate that we have an agent that will in most instances arrest the attack, and then act most efficiently in removing its cause.

It has been claimed that bloodletting will with equal promptness and certainty produce diminished heart force and paralyze the vasomotor system. Bloodletting within the range of safety will not accomplish these results so well. When the depressing effects of veratrum are passed the patient is none the worse for the depression. Not so with bloodletting.

It is objected that the remedy is dangerous. On the contrary, it is with proper management without danger. With the patient kept in the recumbent posture, an adult may take by mouth half a drachm at a dose without much inconvenience. And when alarming depression supervenes morphine or tincture of opium, hypodermatically, will at once remove the unpleasant symptoms.

In judicious hands I consider the danger of fatal depression from veratrum almost *nil.* Lusk, in his admirable work on obstetrics, after quoting the enthusiastic statements of Fearn as to the value of this drug and its probable mode of action in these cases, gives his hearty assent to the statements, but expresses his own fear of danger.

Finally, it must be regarded as fortunate that morphine, one of the most certain and prompt agents in counteracting any alarming depression that might arise after the administration of full doses of veratrum, is itself an agent of great power in controlling the disease under consideration. Thus the mixed treatment may in many cases be preferable.

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# THE PROPHYLAXIS AND TREATMENT OF ECLAMPSIA.

By Edward P. Davis, M.D.,
*Philadelphia.*

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In *The American Journal of the Medical Sciences*, February, 1894, in a paper entitled "The Toxæmia of Pregnancy," I drew attention to what seemed to me the salient features of the diagnosis of threatening eclampsia. Further experience has confirmed my belief that eclampsia is the result of a complex irritant poison, which is produced not only by failure of excretion of the kidneys, but also by failure in the action of the liver, the skin, the lungs, and the intestines. It is my purpose in this paper to illustrate this fact by reference to clinical data.

If a toxæmic condition is the cause of eclampsia it is reasonable to expect in eclamptic patients that symptoms of toxæmia, and especially those connected with the nervous system, should play a prominent part. One of the most striking of these is mania, and its occurrence as a precursor of eclampsia is well illustrated in the following case:

Mrs. A. S., aged thirty-eight years, had borne two children and had one miscarriage. Her children are living and healthy. The labors were normal, and the mother made a good recovery after them. Her third confinement was expected about the 20th of January, 1895. The patient was the wife of a skilled workman, living in plain but comfortable circumstances. With the exception of a slight cough she had been in ordinary health

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until January 8th, when she suffered with intense headache and disturbance of vision. On the following morning she prepared her husband's breakfast as usual, and also the noonday meal for her children. About 1 P. M. she suddenly became maniacal, rushed hastily up two flights of stairs, and attacked her sister-in-law. She was finally placed upon a bed, when convulsions supervened, lasting for some time. She regained consciousness, but at 4 P. M. became comatose, and was taken in this condition to the Jefferson Maternity at 7.30. Upon admission she was entirely unconscious, the os uteri completely dilated, no uterine contractions being present. The pupils were equal and contracted, the eyes slightly turned toward the right; loud râles were heard over both lungs. The pulse was rapid. As soon as I saw the patient I delivered her of twins, the first by version, the second by forceps. Neither child could be resuscitated. One had been dead several hours, the other but a short time. Both children were at term, one weighing five pounds thirteen ounces, the other six pounds five ounces. After three hours of vigorous treatment, consisting of hot packs, copious enemata, the administration of calomel, and digitalis and atropia hypodermatically, the mother's urine, drawn by catheter, showed but slight traces of albumin; specific gravity, 1020; reaction, acid; percentage of urea, $1\frac{3}{10}$. The patient died four hours after admission. The post-mortem examination was made on the following day, when the body was found fairly nourished. It was noticed that the serous membranes were very dry. The right heart was distended and flabby, the left empty. The lungs were markedly congested. The cortex of the kidneys showed fatty change, upon which had been grafted an acute process. The surface of the kidneys was granular. Considerable hemorrhage in the retro-peritoneal connective tissue had occurred. The uterine and ovarian veins of the right side were enormously dilated and varicose. The uterine muscle was firm, the cavity of the womb being clean and dry. Slight hemorrhagic extravasations were found in the stomach. The liver was soft, and its surface mottled and dark in color; it was somewhat enlarged. Post-mortem examination of the bodies of the children showed that no efforts at respiration had been made, so that they had

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perished from asphyxia *in utero*. The placentæ showed areas of infarction and a friable condition of the vessels.

A review of this case with its post-mortem findings furnishes a clinical picture of death from irritant poison. The legs and feet of the patient were not œdematous, the symptoms of Bright's disease or acute kidney failure were lacking, while the sudden mania followed by convulsions, coma, and death resembled far more a case of ptomaine-poisoning than death by uræmia. The intense pulmonary congestion, dry, serous membranes, enlarged, mottled, and softened liver, injected and granular kidneys, distended right heart and diseased placentæ complete a suggestive and instructive picture.

That such a condition is not invariably fatal is illustrated by the following case :

J. S., a colored woman of uncertain habits, gave a history of having previously suffered from enteric fever, grip, pleurisy, and pneumonia at various times. She had borne one child previously. During the present pregnancy she had suffered from epistaxis, swollen legs, less painful at night, and disturbance of vision, with headache. She sought relief at the Jefferson Maternity, where, upon examination, it was found that liver dulness extended three-fingers' breadth below the ribs. The tongue was furred and coated. The pulse was wiry, its tension being greatly increased. Dulness was found beneath the clavicles, with prolonged expiration. The patient suffered from chronic constipation, with anorexia. The urine was highly albuminous, the percentage of urea was below one, and epithelial and granular casts were present. The patient was treated by hot packs, purging with calomel and salines, rest in bed, and milk diet. She improved and became insubordinate, and was discharged. She shortly afterward came under my care at the Philadelphia Hospital in the same condition in which I first saw her. Labor was induced, a very guarded prognosis being given, with a fatal prognosis as regarded the child. After the first bougie was inserted into the uterus the percentage of urea fell to $\frac{76}{100}$, followed by two convulsions. Labor, however, supervened, and

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the patient was delivered spontaneously of a stillborn fœtus. The percentage of urea shortly afterward rose to $1\frac{5}{10}$. The placenta showed multiple infarcts. The patient was treated by the hot pack, with free purgation and the plentiful use of water, and made a gradual recovery. The liver dulness diminished slightly, the condition of the urine became better, and she was able shortly afterward to leave the hospital. It is interesting to observe that, following labor, the amount of urine increased from thirty-three ounces to forty-two ounces, in the next twenty-four hours dropping to forty ounces. This was under the influence of calomel and the use of the hot pack.

In this patient's case the enlarged liver, sluggish intestine, severe headache and anorexia, with great irritability of the nervous system, illustrated well the presence in the body of an irritant poison.

While the cases described illustrate the effects of profound toxæmia in pregnant women, in patients in comfortable circumstances and under intelligent care, the physician will find that much of the suffering which pregnant patients complain of, referred to the nervous system, may be traced to a toxæmic condition more or less pronounced. In women of sensitive nervous system premature labor is not an uncommon result of partial toxæmia. As an illustration of this, the following case is cited:

Mrs. L. J., multigravida, third pregnancy, suffered from habitual constipation following an operation for hemorrhoids. When first examined she was between seven and eight months advanced in pregnancy, in excellent general health, the excretory functions being well performed. She was accustomed to habitual over-exertion, and early in the ninth month of pregnancy she complained of fatigue, restlessness, and severe uterine contractions, which led her to fear that labor was at hand. Examination of the size of the uterus and the position of the child showed that pregnancy lacked between four and five weeks of its normal period. The patient, however, was uncertain regarding the time of the last menstruation and believed her confine-

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ment to be due. A careful examination showed, however, that her processes of excretion were performed less perfectly than had been the case. The specific gravity of the urine was 1018, its reaction acid; it contained no albumin, but the percentage of urea was $\frac{8}{10}$ of 1 per cent. Digestion was poorly performed, and the action of the intestine was sluggish. She was confined to her bed, given a carefully-selected diet, the action of the liver stimulated, and the bowels freely moved. One week after this treatment was instituted the specific gravity of the urine was 1030; it contained an abundance of urates, the percentage of urea being $2\frac{5}{10}$. Although the symptoms of labor were so pronounced as to cause the patient to summon her nurse on one occasion, uterine contractions gradually ceased, and the patient went four weeks longer in pregnancy, being subsequently delivered in normal labor. During the last four weeks overexertion was strictly avoided, her diet was carefully regulated, and a close watch kept of the excretory processes.

Œdema and a trace of albumin, and also of sugar, in the urine, while pathological during pregnancy, may yet be present without threatening eclampsia. These phenomena are of distinctly minor importance if the percentage of solids in the urine indicates that excretion is proceeding properly.

Mrs. L. E., aged thirty years, primigravida, had taken little exercise during her pregnancy, had suffered from constipation, and was excessively fond of sweets. She is a stout, heavy woman, with justo-major pelvis. Her feet and legs were greatly swollen, the œdema extending up the thighs to the groins and labia. General anasarca was present, the lower extremities being more swollen than other portions of the body. The patient, however, while complaining of salivation and an abnormal taste in the mouth, did not suffer from headache, slept well, and had good appetite. The examination of the urine showed the specific gravity to be 1020, sugar and albumin present, with an abundant secretion of urea, $2\frac{7}{10}$ per cent. This patient went to term, and was delivered by forceps, her labor being complicated by œdema and hæmatoma of one of the labia. She is now convalescent and has never had symptoms of eclampsia.

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Toxæmia is occasionally associated with fecal impaction in a very plain and instructive relationship. The symptoms of this condition are characteristic headache and malaise, and also a rapid and feeble pulse. By physical examination the large intestine is found distended with masses of hardened feces through either a portion or all of its extent. This condition is well illustrated by the following case:

Mrs. F., aged twenty-eight years, multigravida, was admitted to the Jefferson Maternity in the ninth month of pregnancy seeking relief from headache, nausea, and prostration. Upon examination an impacted colon was plainly discernible, the patient stating that she had had no free bowel movements for more than a week. Her temperature was 100.5°, her pulse 124. She could not sleep, had little appetite, and complained of headache, impaired vision, and general prostration. An examination of the urine showed its specific gravity 1006, albumin and sugar being absent, the percentage of urea present being 0.5 of 1 per cent. The patient stated that she had suffered in a similar manner in former pregnancies, but never so severely. She was at once put to bed and treated actively by hot packs, purgatives, and restricted diet. Under this treatment she experienced marked relief; her headache gradually ceased; she was able to sleep. Her appetite partially returned, and her improvement was so pronounced that she left the Maternity and returned to her home. The specific gravity of her urine increased steadily under the treatment pursued, while the percentage of urea rose from 0.5 of 1 per cent. to 1.1 per cent. By high enemata it was possible to partially empty the impacted colon; but, as the patient would remain but four days in the Maternity, a thorough emptying of the bowel was impossible.

This patient had been treated at her home by sedatives addressed to the nervous system, the physician in attendance supposing that her headache was a purely nervous phenomenon.

In my first series of eighty-four cases, in which five hundred and sixty-four examinations of the urine were made, I

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found the average percentage of urea present before labor to be 1.4 per cent. After labor, in healthy women, an increased excretion of urea is observed for several days following parturition. In a second series of sixty-five cases, in which one hundred and ninety-six examinations of the urine were made before labor, the same results have been observed as in the previous series. The most pronounced cases showing the effects of toxæmia upon the nervous system without the occurrence of eclampsia are observed in women of highly nervous temperament, and often highly educated and intelligent women. In these patients the gradual development of malaise, headache, sleeplessness, nervous irritability, melancholia, apprehension of approaching confinement, with gradually diminished excretion from the intestines and kidneys, form a clinical picture which should not be neglected by the practising obstetrician. If such a case is patiently studied it will be found that the symptoms associated with the nervous system result from diminished excretion and the irritant effect of retained toxins. No greater mistake can be made than to treat these patients by the administration of bromides, as is often done. Rest and increased excretion have invariably in my experience resulted in the disappearance of the symptoms.

So far as the study of the urine is concerned we yet lack for practical purposes a clinical index of the amount of solid matter excreted. It has been my custom to use the percentage of urea in a given specimen the specific gravity and quantity of which are known as an index of excretion. I have found latterly the simple apparatus furnished by Squibb most convenient and efficient. His apparatus, familiar to all, does not require the use of bromine, which is so disagreeable to the investigator. Some prefer to take the coefficient 2.33 and obtain the amount of solid matter in a given specimen by multiplying the last two figures of its specific gravity by this coefficient. It is urged by those who prefer this method of study that urea in itself is not a dangerous in-

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gredient of the urine, and that under a vegetable diet it may sink to a very low percentage, which would not fairly indicate the condition of the patient. Undoubtedly a more thorough way of studying the patient's excretory processes is by using both methods, and, in addition, putting the patient upon a fixed diet list, so that an accurate idea of the ingesta may be obtained, as well as a knowledge of the excreta. Such a diet list for pregnant patients should consist of the lighter sorts of meats—fish, oysters, birds, lamb, and mutton—to be taken in moderation with an abundant supply of fresh fruit, of fresh vegetables, stale bread, and water taken freely between meals. For restless patients who excrete badly the warm bath at night will often assist greatly in procuring sleep. Light flannel next the skin, entire absence from constriction about the waist, the prolonged use, if necessary, of gentle laxatives, such as cascara, with plenty of fresh air and avoidance of over-exertion, usually suffice to keep these patients in comfortable condition. As with puerperal sepsis, so with toxæmia and eclampsia; they are best treated by preventing them and recognizing the conditions which favor their development. This requires, however, a careful and intelligent supervision of pregnant patients, and the profession will find it necessary to educate many of their patients in the belief that such medical care is necessary and deserving of adequate compensation.

In the presence of eclampsia two indications are paramount. The first is to cause prompt, thorough, and copious elimination by every possible means. The hot pack, free purgation, and saline transfusion are of the greatest importance. To be avoided are sedatives, which hinder excretion and depress the cardiac and respiratory centres. In cases where apoplexy is threatened and a heavy, full pulse indicates bleeding, such a procedure is justifiable.

It is rarely the case that a patient suffers from profound toxæmia and eclampsia without the beginning of labor as a direct result, from the stimulation of the uterine nerves which



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retained toxins furnish. Taking advantage of this conservative process, rapid delivery is indicated as soon as it can be accomplished without positive and severe injury to the mother. The interests of the fœtus will be best served by rapid delivery, when the familiar fact is taken into consideration that the same poisons which threaten the mother often kill the child.

It is not my purpose to weary you with a review of recent literature upon this subject. Recent studies in medicine, notably those of Hughes and Carter, with the familiar investigations of Bouchard, call attention to the fact that the first symptoms of toxæmia are often associated with the nervous system. The recent studies of Thomson and Herman, of London, call attention to the two different forms of visceral disease present in these cases. Woyer's interesting report of eclampsia in mother and child, with post-mortem examination of the child and examination of its urine, illustrates in a most interesting manner the fact that toxæmia is fatal in the same way to mother and child. It has been my purpose in thus addressing this Society to urge as strongly as possible the necessity of a thorough study of pregnant patients, and to draw attention to the fallacy of the belief that a pregnant patient is not in danger unless the urine is highly albuminous and œdema is pronounced. While in physiological patients pregnancy is a physiological process, so few of our patients are in perfect health before pregnancy or during this time that the period of pregnancy requires watchful care, while the study of the condition of the mother during gestation affords a most interesting and instructive field of pathological research.

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## DISCUSSION.

Dr. William T. Lusk, of New York.—I was very much interested in that part of the first paper referring to the treatment of puerperal eclampsia by veratrum viride. I had first learned of this drug in this connection from the late Dr. Barker, but I had not dared personally to give it in such large doses referred to by Dr. Reamy until I saw a teaspoonful of Norwood's tincture given accidentally to a child instead of paregoric. The child did not mind it at all. Since then I have always had the courage to give it. The theory now is that eclampsia is due to a reflex spasm of the vessels of the brain, and that the kidney affection and anæmic condition of the brain are due in many cases to the same causes; that they are coincident; and that the convulsions do not, as has been stated, depend upon a condition of the kidneys. Of course we all understand that the accumulation of the excrementitious material in the blood adds gravity to the situation, but the convulsions proper are of reflex character, being due to spasm of the vessels going to the brain. This offers a physiological explanation of the cases which have been enumerated by Dr. Reamy.

Now, my own experience is important chiefly in the line of speedy evacuation of the uterus. I remember very well Dr. Barker's telling me early in my practice of a case of puerperal eclampsia about the seventh month of pregnancy, which he had seen in consultation, and he spoke in the most complimentary terms of the manner in which the case was managed by the attending physician. He said that he could not have treated the patient better himself. I asked him what became of the patient, and he replied that she died. My experience has been that patients having puerperal eclampsia after the seventh month almost invariably die under medicinal treatment, and it has led me to adopt the method which seems to be becoming the universal practice, of emptying the uterus as soon as possible. My theory is that the accumulation of excrementitious material which takes place with the stoppage of the function of the kidneys leads in a very short time to fatty degeneration of the mus-

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cular structure of the heart. I do not mean to say that albuminuria in pregnancy is not to be treated, but when it advances to the stage of convulsions or threatening convulsions, it is then time to empty the uterus; that step is most frequently followed by the disappearance of the symptoms. I think that in about ninety per cent. of the cases speedily emptying the uterus, thus removing the reflex cause, leads to the suspension of the convulsions. These convulsions have been noticed to come on frequently about the time the head settles down into the pelvic cavity. In bringing on labor it is necessary to empty the uterus while the patient is under the influence of an anæsthetic; that, of course, we all know. It is equally necessary that the anæsthesia should not be too prolonged. In many cases where unfavorable results have followed it has been due, it is believed, to prolonged anæsthesia, so that the speedy method of emptying the uterus is now in vogue. I am very sorry that Dr. Edgar is not here to read his paper on Dührssen's method of deep incisions in the cervix. I consider this method applicable in just those cases which occur so frequently in primiparæ, and in which the dilatation is extremely slow. Five years ago it would have been considered rash; but, with antiseptic measures and with every care, it seems to be possible to carry out the procedure with entire safety and to enable the physician to greatly shorten the period of delivery.

The new theory that uræmic convulsions are due to the influence of kreatinin upon the layers of the brain will, like the uræmic theory, have its day.

Dr. A. Lapthorn Smith, of Montreal.—I was not so fortunate as to hear the papers read, but I hope that the general tone of the discussion here will always be in favor of the early emptying of the uterus whenever we feel that there is the slightest danger of puerperal eclampsia. Whenever the urine is very much diminished in quantity and is loaded with albumin, I think that it is almost criminal for us to remain idle until the kidneys have become permanently injured, when we possess the means of saving that woman's life. I have done this several times in my part of the country, at first meeting with considerable opposition, but now with much less. I wish to insist that, as Dr. Lusk as said,

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it should be done as far as possible under anæsthesia. For this purpose chloral possesses great advantages. When you first see the patient put her under the influence of chloral and bromide, administered per rectum. Later on, during delivery, use the A. C. E. mixture. What I want to speak of especially is the value of water in these cases. I have watched the secretions carefully and have found that the quantity of urine has been very small—indeed, almost suppressed—and it has been loaded with urates. I place the patient near a hot-water register and keep her in a perspiration, giving her at the same time as much water as she can drink, and if she will not drink freely, I give it by the rectum, because the kidneys work at a great disadvantage when there is not enough water in the system to act as a diuretic and to wash them out freely. It is not of much use to give drugs to make the kidneys act unless we supply them with plenty of water to work upon. I have had very satisfactory results from this plan.

Dr. G. J. Engelmann, of Boston.—I always insist upon the prophylactic measures suggested in Dr. Davis's paper. In a great many cases the condition leading up to eclampsia is one of slow development. Certainly, one should examine the urine as soon as any symptoms on the part of the patient point to the possible development of eclampsia. I have seen the urine coagulate completely on boiling, and yet the patients were carried through to labor at term by such management as has been suggested in Dr. Davis's paper. It is common to pay too little attention to the urine and the general condition of the pregnant woman until striking symptoms occur, and, as a rule, we are not called by the attending physician until the last moment, after the greatest mischief has been done. The importance of the statements made in Dr. Davis's paper should be emphasized.

The President.—I think that the cardinal point in the cause of these cases of eclampsia is really a condition of renal insufficiency. The kidneys are not acting sufficiently to cast off the poisons which should be eliminated by these organs, so that they gradually accumulate in the system until the patient is thoroughly poisoned. In a great many cases there is no albumin in the urine until after the first convulsion. I have seen a number in which

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the urine had been examined up to the day of the convulsion, and yet it had been perfectly free from albumin. But if we collect the secretion for twenty-four hours we shall find that the patient is passing a great deal less than the normal amount, and that the solids are much below the normal. In other words, the kidneys are not doing their work. If we adopt the plan of urging the patient to drink large quantities of water, regarding which I am as much of a crank as Dr. Smith, we stimulate the kidneys to carry off the poisons. I think that is a very important point in prophylaxis. If we examine the amount of urine passed, together with the amount of solids, we shall gain a great deal more information than by looking to the amount of albumin, which does not signify much after all.

I have had considerable experience with veratrum viride, and I value it as highly as Dr. Reamy. I have never dared to give it in quite such large doses, but I think, after an experience which I had a short time ago, I shall never be afraid of it again. A practitioner who had been very much impressed with the value of veratrum viride telephoned for me to come down and see a case of convulsions. Before I could start he sent another message that I need not come, that the patient was dying, was pulseless, blue and cold, and would be dead before I could arrive. About the end of my office hours I received another telephone that the patient was better, but was still having convulsions, and that I had better come. So I went, found a young, strong woman with a bounding pulse, and giving no evidence of being anywhere near death. I asked the doctor what he had done; he said that he had been so much pleased with veratrum viride, which I had used in a preceding case, that he had given a teaspoonful of the fluid extract, and it had apparently done little good; that after an hour or so the patient was nearly dead, but had revived. Now, what he had done was to fully poison the patient with veratrum viride to such a degree that he thought she was dying. But she soon got over the effects of the drug, the pulse came up, and when I saw her she was in just as good condition as if she had not taken the drug. So it seems that while the remedy will produce marked symptoms when given in excessive doses, still the patient will overcome it and show no marked

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results. So I shall not be afraid of it again. I have used it hypodermatically ever since Dr. King wrote his paper on it, and I am sure that I have saved a number of lives by giving it in good doses, keeping the pulse down to sixty, for I find that by keeping it down to that point there will probably be no more convulsions. I think, however, that it is necessary to choose our cases. If we have a patient with a full, bounding pulse and high arterial tension —and that is the point—we can give it with benefit. If, on the other hand, we have a poor, weak, sickly, poorly nourished patient, with a rapid, small pulse, without high tension, I do not think that veratrum viride will do any good. The two conditions are entirely different.

Dr. Reamy.—As I stated on the very first page of my paper, it contained simply clinical experience on the treatment of puerperal eclampsia. I might as well have added to the title the treatment of puerperal eclampsia by veratrum viride. I did not want in this paper to go into the general question of prophylaxis. Dr. Davis's paper has discussed that subject thoroughly. There could be no better contribution to that part of the subject than the one to which I referred in my paper.

I fully concur in all the statements made here as to the necessity for frequent examinations of the urine during gestation, and I do so at least once a week during the last months. Regarding the immediate cause of the convulsions authors differ; still, it may be said with certainty, that the only channels through which to get rid of the accumulated poison is through the emunctories. There should be free action of the kidneys, intestinal canal, and skin, in order that we may secure our patients from the dangers of uræmic convulsions.

To my mind, it is a very serious question whether the position taken by our distinguished Fellow from Canada, for whose opinion I have the greatest respect, is tenable, namely, that it should be the rule under all circumstances to speedily deliver the woman when convulsions occur. First, I may be permitted to call attention to the fact that in a large proportion of the few cases reported in this paper the convulsions did not occur until after the delivery. Of course that is a negative position. And in a very large proportion of the cases reported in the journals during the

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last thirty years the convulsions did not occur until after delivery. When the convulsions do occur after delivery, statistics show that, other things being equal, the disease is not ordinarily so fatal as when they occur prior to delivery. Now, that would imply, of course, that there is some element of danger in the condition of pregnancy, and would indicate the propriety of delivery. But it cannot be claimed, I think, that the presence of a child in utero is an element of very great danger. If the os is not dilated in a case of this character, where the convulsions came on before delivery, I am unable to see how there can be any special amount of safety in inducing labor. I do not see how you can avoid irritation consequent on forcible dilatation, and, it may be, the use of forceps. Then, it has been observed that after delivery has been accomplished the convulsions in a large number of cases continue, and this fact, taken in connection with the other stated above, that in a large majority of the cases the convulsions do not occur until aftery delivery has taken place spontaneously, it seems to me, shows that the induction of labor is not the course of safety.

I beg to call attention to the fact that the object of my paper was to diffuse through the profession more thoroughly the idea, first, that veratrum viride will, in a large percentage of these cases, arrest the convulsions, doubtless by producing vasomotor paralysis and relieving the anæmia of the brain; secondly, that after the convulsions are controlled it produces diuresis to a very marked degree, a result of the remedy to which attention has not been generally called; it also produces prompt and powerful action of the skin. Now, when this end has been accomplished, and it comes almost like magic, I would, in cases like the one to which the President referred, give morphine.

When we remember that the secondary effect of the same remedy which controls convulsions is to remove from the system the toxic principles which were the agents in the immediate induction of the convulsions, and remember that there is no danger connected with the use of the agent, it seems to me that it makes it a wonderful acquisition to our resources in the treatment of these cases.

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# THE ULTIMATE RESULTS OF TRACHELORRHAPHY.

By Willis E. Ford, M.D.,
*Utica, N. Y.*

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The necessity for a surgical operation depends many times upon anatomical considerations, though minor gynecological operations are often elective and are advised because the after-history of other patients similarly treated justifies it, and not because there is danger to life. The opinion as to whether a procedure is to be advocated or not sometimes depends upon the point of view taken by the operator. Thus those gynecologists who have been developed from general surgeons may differ widely from those who have been general practitioners, or who have been interested in some special branch of medicine.

Trachelorrhaphy has thus been discussed from many points of view until it is a threadbare subject, and yet the widest difference exists both in the theory and practice of gynecologists to-day regarding it. My early training in nervous diseases has naturally made me seriously consider the nervous conditions of women, while in later years I devoted my time to gynecology, and I shall, therefore, in this short paper refer only to the effects of trachelorrhaphy on nervous disorders.

Living in a small city, I observe the post-operative condition of women, and am able to continue the clinical observation of a larger proportion of those operated upon than a metropolitan surgeon can hope to do. This personal observation of a large number of patients, many for years after a

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trachelorrhaphy has been done, has led me to conclusions which I venture to present here.

Much has been said about the reflex nervous disturbance produced by tears in the neck of the womb, both great and small, and the operation has been advised because of this, though I confess I could never see any justification for the use of the term reflex pain or reflex nervous disturbance.

A mass of cicatricial tissue at the bottom of an old laceration may, and does, so interfere with the normal circulation of the parts that congestion and actual enlargement of the uterus occurs, and pain comes as the result, or an inflammatory condition remaining for a long time may start a neuritis, which gives continual tenderness and pain in the pelvis.

I have not seen this produce loss of inhibitory power of the cord which gives true reflex explosions. It cannot be said that pain or other continuous symptoms in remote parts of the body are due to reflex influences. Mere transferrence of pain is not of a reflex nature. Continual irritation of an afferent nerve may so disturb the ganglionic centre that after a time the inhibitory power is lessened or overcome and an explosion takes place along some other nerve leading from this centre. This is always, however, spasmodic, temporary, and transient, like all other normal reflexes.

Neurasthenic women have pain and uncomfortable sensations in many parts of the body, though not all the organs are diseased. And, again, neurasthenic women sometimes have considerable pelvic disease; indeed this may have caused the neurasthenia, and yet they get well without operation.

What has always seemed more strange is the fact that women with uterine disorders—say cervical lacerations and the accompanying metritis—having perhaps hemorrhages to such an extent that the general health is undermined, and the mental inhibition, if one may use such a term, being lost, the patients become insane; but even then they recover from the insanity without uterine treatment, and more speedily, I believe, than they do with it.

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The reason for this latter fact probably is that it is not wise to disturb the emotions or to divert the attention of unbalanced minds to organs which are so frequently the seat of perverted sensations. The physical basis of all disease is so thoroughly rooted in our minds that the removal of the cause seems a necessity. Cervical laceration is only an indirect cause, and if we exclude the term reflex neurosis, or reflex pain, as I am sure we must, we must say that a nervous disorder is made better by trachelorrhaphy only because it improves the general health. All of this is outside the general question as to the amount of nervousness based on mental apprehension, because it is known that there is something wrong with the womb. And, again, the mental effect of an operation *per se* cannot be considered here though many neurasthenics are undoubtedly benefited by it, as they are by the faith cure.

There is, on the other hand, a large number of patients who are made worse mentally by an operation of any kind, because, having escaped death from an operation and not having suffered pain, the overwrought mind morbidly turns to surgery for the relief of every uncomfortable sensation.

Much discredit has also been thrown upon this justifiable, and in many cases necessary, operation because of the promise of relief to nervous symptoms, a promise not justified by the facts. Instances are by no means rare in which surgeons are importuned to do operations that would not only be useless, but would be hazardous, without the prospect of any advantage to the patient. It is quite probable that trachelorrhaphy ranks first among operations that are done without any benefit to the patient, and at the same time one may truthfully say that in proper cases no operation affords so much relief with so little risk and discomfort to the patient.

For instance, during the past year four of my clients, whom I had some years ago delivered of children without accident or injury, became nervous and out of health; in two of the cases from an unreasonable amount of social duty and

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pleasure, and in the other two from the care of large households, combined with long illness of members of the family.

All consulted me regarding the necessity for the operation of trachelorrhaphy. These women, being intelligent and cultivated, had been told of the slight rent in the neck of the womb at the time, and I had kept them in bed for a longer period than is usual, and they got up well. Long afterward, when out of health, they heard of some friends who had been operated upon, and at once became impressed with the necessity for a trachelorrhaphy. I declined to operate, and two of the patients went away and were operated upon. One cervix sewed up so tight that it had to be thoroughly divulsed after coming home, and the other woman is still as feeble and nervous as before. Two were not operated upon, and after a time, with very simple treatment, recovered.

This experience perhaps more than anything else caused me to look up my own statistics as to the ultimate results in nervous women. In doing this I have omitted all reference to cases that were uncertain in the surgical result, or were lost sight of, or in which the operation was done for other physicians and in which I had nothing more to do than to operate. Excluding thus a large number of operations, I have collected one hundred and thirty-six cases of my own that have been carefully observed long enough afterward to be used for statistical purposes. None of these cases were operated upon this year, and a few of them go back to nine years ago.

I have not thought it worth while to classify them as to the time since the operation, because one year is sufficient to get a fair estimate of the result. Neither have I thought it necessary to state whether the tears were unilateral or bilateral, for in my experience this is of less importance than the depth of the tear; and regarding this I may state that slight rents where the mucous membrane has healed and remained sound never seemed to justify an operation.

Of these one hundred and thirty-six patients, sixty did not present any unusual nervous symptoms and the operation was

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done for the usual condition of ill-health, with pelvic pain caused by erosions of the cervix, metritis, etc. The recovery in all was satisfactory, the restoration to good general health followed, and the ultimate result was all that could be asked for. In the other seventy-six cases there was marked nervous disturbance. Those symptoms which go to make up the condition known as neurasthenia was what brought the patients to the physician, and it was then discovered that they had deep lacerations with enlarged uterus and erosions, etc.

It is hard to classify symptoms of neurasthenia partly pointing to physical disturbance, and partly to mental perturbation. Women in this condition with pelvic disorders have the same symptoms that others have who are free from pelvic disease. The want of energy, both mental and physical, the emotional disturbance due largely to the acquired habit of yielding to physical discomfort and the apprehension that soon effaces the will, the consequent disturbance of secretions and perversion of nutrition—all combine to make a symmetrical picture of misery.

I carefully repaired the torn cervix in each case and had good union, keeping the patient in bed for a sufficient time to allow the involution of the uterus to take place. In forty-nine cases the recovery from the nervous symptoms took place under proper management for a year, and in twenty-seven there was no marked change from the operation. In two of these I afterward removed the appendages for actual disease of the ovaries, leaving twenty-five patients uncured after the lapse of more than one year. The percentage of recoveries from general neurasthenia was not larger, therefore, than one may reasonably expect without operation. This was not due to any failure of the operation itself, and in only the two cases mentioned did I find any appreciable pelvic disturbance afterward.

It would seem that a well-marked nervous disorder which has become established is not removed by an operative proce-

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dure which is justifiable, even if it reaches the original cause of the departure from health.

The fact that none of these patients in whom marked neurasthenia was present showed much immediate improvement in symptoms after the operation, and that a large percentage did not recover after the lapse of a year, was disappointing at the time, though the consideration of these statistics that seems to point to a rule has not surprised me.

If it was true that permanent perversion of function of a distant organ could be caused by a peripheral irritation, then the term reflex nervous disturbance, as it has been used in gynecology, would be correct and the cures by operation would be certain.

My experience with this operation for the relief of well-marked nervous disorders has not been very different from my experience with oöphorectomy in the same class of cases.

When a local disease or injury is so serious as to impair the general health an operation for its cure gives a brilliant result, but when under the same circumstances a well-marked nervous disorder has come on instead of general ill health, the same operation does not promise so much. If the general health is not impaired at all trachelorrhaphy does not materially influence the course of a nervous disease, such as neurasthenia in its various forms, neuralgia in remote organs, epilepsy, hysteria, hysterical aphonia, etc.

The reason for this lies in the fact that these disorders, when once fully established, have a deeper cause than any peripheral irritation, no matter how continuous or how severe it may be. It is better to recognize this fact than to promise for trachelorrhaphy or oöphorectomy more than these operations can be reasonably expected to accomplish.

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## DISCUSSION.

DR. CLEMENT CLEVELAND, of New York.—I wish to refer to one cause of failure to relieve reflex disturbances by trachelorrhaphy. It is that the operation, as understood and carried out by many, means simply the repair of the angles of the tear. I have seen many cases in which the operation, thus performed, had given relief only a short time, and had to be done properly afterward. The fact is overlooked that in a great many cases the degeneration is as marked in the anterior and posterior lips as it is in the torn angles, and the operation is not complete until one has performed amputation of these lips.

DR. G. J. ENGELMANN, of Boston.—Allow me to go one step further and to state that in old cases of laceration we generally find more or less endometritis, and as a rule I would not do trachelorrhaphy without preceding it by curettage. I have so frequently found the condition which Dr. Ford described that, in place of doing Emmet's operation, I usually perform what the Germans call amputation. But it is not amputation; it is simply removal of more or less of the lips. This gives an admirable os and removes the diseased tissue, and results, I think, in better involution than where we simply cut out a small piece.

Dr. Ford has touched me on a very tender point. He says that he has seen no reflexes from these lacerations.

DR. FORD.—I did not say that. I said that mere transferrence of pain or disorder of function from a distant organ could not be called a reflex disturbance.

DR. ENGELMANN.—No, certainly not. But when it is distinctly marked; when the patient vomits; when she has great pain in the back when walking, due to rubbing together of raw surfaces; when the passage of the sound through the lacerated os causes great pain in the back, I call that reflex. And I have seen those patients cured, as it were, immediately after an operation. Even when an anæsthetic had not been given, as soon as the operation was completed the intense backache and the drawing back of the head, etc., ceased. I have observed the same benefit on the general nervous system.

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My experience has taught me that if you will curette the uterus, and where there is much enlargement of the lips do the so-called amputation of Schrœder, which may be as extensive or as limited as you will, you will get better results than from simply repairing the edges of the tear.

Dr. Andrew F. Currier, of New York.—In our experience with this operation we must all have observed these two classes of cases—those in which there is not much the matter with the cervix, and those in which there is a great deal the matter. And it is very peculiar that in some of the cases in which most of us would say that there is very little that is abnormal in the uterus, the ultimate results of the operation are surprisingly good. And that goes to prove what has been stated by Dr. Ford, and by another gentleman when discussing another subject yesterday, that the influence of the operation in these cases is largely, if not altogether, upon the patient's emotions. An emotional individual when subjected to an experience of this kind expects some considerable change, some considerable result from the operation, and gets it. Now, the question for us to decide is whether, in a case like that, surgical treatment is the proper course. That question every man has to decide for himself.

In the other class of cases, in which there is much induration of the tissues, we certainly do get decided results, such as we have a right to expect from the changes in nutrition set up by an operation of this kind. The results in such cases may be far reaching, extending in many instances to those disorders in remote structures of which the local condition is the cause. That brings up again the whole question of reflex or transferred pain. We all know the intimate connection of different parts of the nervous system with one another; we all know the intimate connection between the nervous system of the uterus and ovaries and that of the rest of the body, especially the viscera, and it seems to me a waste of time to quibble over names in a matter of this character. The case is very much the same as with troubles in other parts of the body. We all know how much trouble, near and remote, a simple corn will sometimes cause—the most agonizing, the most excruciating sensations in various parts of the body, with, sometimes, great exhaustion. And so

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we should not be surprised that a local lesion, a focus of irritation like this indurated tissue in the uterus, should sometimes set up a most extensive set of symptoms which we all know are very satisfactorily relieved by trachelorrhaphy.

Dr. A. Palmer Dudley, of New York.—To my mind the ultimate results of trachelorrhaphy depend upon your choice of cases and the manner in which you do your work. In my early professional life I operated in every case of lacerated cervix that came within my reach. As I grew older and acquired more experience the cases in which I operated gradually diminished. I came to believe that the major portion of the damage done by laceration of the cervix was produced within the first sixty days, and that aside from eversion of the lips and, in time, cystic degeneration of those lips, a mere laceration of the cervix had very little to do with the reflex symptoms from which many of these women complained, for the reason that the injury done at the time came to be overshadowed by its influence in arresting involution of the uterus. I do not mean by that the development of chronic areolar hyperplasia, but arrest of absorption of cellular tissue already in the uterus at the time of delivery, resulting in constant passive congestion and reflex symptoms in the ovaries. The idea that by cutting out the tear and sewing up the wound one could relieve the woman, I came to regard as a mistake. In closing the wound one is very apt to narrow the canal to the extent of obstructing the escape of the normal discharges from the uterus, thereby injuring the woman instead of benefiting her. Unless I can find a scar which is tender, I now seldom operate for laceration of the cervix. Where the laceration has existed long and there is eversion and cystic degeneration of the lips, we are not likely to remove all the cysts in operating, but merely cover them up and interfere with other treatment which might have proven successful. So I now believe that in closing a laceration of the cervix under such conditions I shall injure my patient, and I therefore confine my treatment to the conditions existing above the laceration. Many here can probably recall cases in which, before operating for laceration of the cervix, they could recognize no disease of the uterine appendages, while afterward disease developed. Why? Simply because, in repairing the



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cervix, they closed it, prevented the normal discharge from the uterus, induced continual passive congestion of the endometrium, and the disease then traveled up the tubes.

As I have said, I have almost abandoned trachelorrhaphy, and I do not amputate the cervix for the reason that I believe that it is necessary to preserve the proper balance between the vaginal and abdominal portions of the organ. If this is destroyed we favor displacement.

Without taking more time, I shall simply add that I believe that I have been able to trace the symptoms to which Dr. Ford has alluded as coming from local disease, but not as coming directly from the laceration of the cervix *per se.*

Dr. S. C. Gordon, of Portland, Maine.—When Dr. Pryor read his paper before this Society last year, in which he took the ground that trachelorrhaphy was scarcely ever justifiable, I felt almost like agreeing with him, for it had been in the line of my teaching for several years. And since then I have been impressing those views much more strongly upon my pupils. Like Dr. Dudley, I find myself almost never doing the operation of trachelorrhaphy. If it is done just after parturition, I believe that it is justifiable. But where it is not done until long after, conditions are present, as Dr. Dudley has said, which it will not remedy. I have certainly seen many extremely bad conditions of the appendages following trachelorrhaphy, so many that I dread now to do the operation at all. I believe that we can do better by dilatation and curettage. Dilate thoroughly, curette, dilate again, wash out, dilate again, until we leave the canal in a perfectly patulous condition—tapping all cysts, curetting with a sharp curette. We thus accomplish that which will set up the process of involution, accomplish as much as could be accomplished by trachelorrhaphy, and at the same time leave a patulous canal which allows free drainage. The latter, to my mind, is the most important element. I can safely say that I have not done trachelorrhaphy twice in the past two years.

Dr. George T. Harrison, of New York.—I would remind Dr. Gordon, who has just taken his seat, of the homely German adage, that in emptying the bath it is not necessary to spill the baby.

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Trachelorrhaphy, I have maintained and do maintain, is such a valuable contribution to our therapeutic procedures in the treatment of female diseases that it alone, had Dr. Emmet done nothing else, ought to hand his name down to posterity. And yet I maintain that there is no operation which is performed upon the female pelvic organs that has been more abused than this one. I believe that the ideas which many have of the significance of a tear do not rest upon a scientific basis. Laceration of the cervix has been invoked to account for every psychosis, for every obscure pain, for anæmia, for everything on earth which a woman can have. The consequence is that men who believe that, can have a surgical operation whenever they wish. I do not think that the laceration in itself accounts for the cervical catarrh and ectropion. Some special irritation is necessary to cause that. The researches of Veit and Ruge have shown that in ectropion and cervical catarrh there is a proliferation of cells, and this we can have irrespective of laceration. I have seen laceration extend up to the vaginal junction and yet there was freedom from anything of that kind.

Dr. Dudley has called attention to one of the very bad results of trachelorrhaphy, namely, stenosis. At this very time I have under treatment a lady operated upon by an excellent gynecologist who is now suffering from dysmenorrhœa and endometritis due to stenosis.

Simply repairing the edges of the tear and turning in the diseased mucous membrane does not cure the patient. You do not cure the endometritis by simply doing trachelorrhaphy. Not long since I was called by a colleague in a case of labor. Apparently the woman had no os, and he thought that it was necessary to make deep incisions into the cervix in order to allow the child's head to come down. On examination I found away to one side a little depression which I supposed represented the os. As the tissues became softened, I was able with my finger to dilate this little os, which was so small and drawn out of position because of a former trachelorrhaphy. Indeed, this woman had had two trachelorrhaphies. In another case the cervix had been practically closed, and it was absolutely necessary to incise it in order to permit the passage of the child's head.

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DR. H. R. HOLMES, of Portland, Oregon.—This is a subject on which I have very strong convictions. I have been in the habit of operating upon lacerations of the cervix, including those which gynecologists usually do not consider of sufficient extent to be of much importance. I believe that even slight lacerations, by forming cicatrical tissue, pinching upon nerves, and setting up reflex irritation, tend to interfere with the process of digestion and other processes which are involved in the nutrition of the body. I have observed the practice, and have studied the views of different men, and I believe that there is no other condition regarding which there is so much difference of opinion among gynecologists as the one under consideration. And I think that the reason is that many of the symptoms which might be attributable in part to laceration of the cervix must be due in large measure to the accompanying endometritis and other results of injuries to the pelvic floor, so I am pleased to term this relationship a partnership of causes. Many slight lacerations of the cervix are attended with endometritis, which endometritis is benefited by a single curettage. But endometritis, laceration of the cervix, and injury to the pelvic floor are so commonly associated that we are performing incomplete work when we address our remedies to only one of the conditions. If trachelorrhaphy were a serious surgical procedure, I would not repair the cervix after curettage and then repair the pelvic floor; but since it is very simple and may be done in conjunction with the other procedures, I think that all should be done at one time.

DR. FORD.—In regard to the operation itself, I would only say that in the cases to which I have referred it had been successful, and that all cases were excluded in which there was any doubt on this point. Of course no one will sew up a deep laceration of the cervix in these days where there is cystic degeneration, or endometritis, without at the same time curetting the uterus and removing diseased tissue in the cervix. But I do not believe that it is necessary to amputate the cervix, for when you remove the angle of tissue there is sufficient shortening of the cervix to give the result aimed at by Dr. Cleveland.

I only wished to call attention to the fact that the majority of neurasthenic women are not so much improved by this operation as by general treatment. I did not go into the causes of general

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ill health. No one can believe in trachelorrhaphy more strongly than I, yet I do not do it unless the tear is accompanied by other diseased conditions of the uterus. I do not believe in repairing slight tears at all. And it is just for this reason that I wish to bring this subject up now, when there is offered as an excuse for this operation the relief of what is called reflex neurosis, reflex pain, reflex disturbance, when there is no such thing except in sudden, spasmodic, and transient conditions. Pain which is continuous is never reflex. A reflex, like all normal reflexes, must be sudden, in the nature of spasms.

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# A FEW CASES OF TRUE PELVIC CELLULITIS.

## A Plea for More Thorough Pelvic Surgery.

By Ely Van de Warker, M.D.,
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It is not many years since, under the stimulus of what was then called progress, the term "pelvic cellulitis" was denied a place as a condition of disease. It was regarded as a phantom, the product of half-knowledge, if not of ignorance.

After holding absolute sway as the leading factor in the pathology of the female pelvis, according to the best authority of the time, it was deposed and actually driven out of respectable literature by the pelvic surgeon. By the fingers of the cœliotomists it was demonstrated beyond all doubt that what had been frequently regarded as an inflammation of the cellular connective tissue was but an adhesion of near parts due to an inflammatory exudate, or a disease of the tubes and ovaries, while the cellular structure remained intact. This condition was found so frequently that it was regarded that collections of pus in the pelvic connective tissue were rarely if ever seen, and that such collections of pus were in the Fallopian tubes or in peritoneal spaces shut in by adhesive exudate; or they were designated by the collective and uncertain name of "pus-sacs."

All scientific men must admit that this was a true advance, and that a vague and erroneous theory of pelvic inflammation was overthrown. It is positively a fact that the term "pelvic

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cellulitis" was used in a most unscientific and even ignorant way. By it were explained all forms of pelvic adhesions and exudates, and masses not evidently due to neoplasms. This was cleared up by the pelvic surgeon. It was the revolt of the man of facts against the despotism of the man of theory. But to one who used facts as a mental search-light after truth it was but the exchange of one form of despotism for another, more arrogant and aggressive than the first.

The pelvic, tubal, or ovarian extirpator was intolerant of the very term of cellular inflammation. Peritoneal and tubal disease simply took the place of cellular disease as the one and ever-present agent of pelvic inflammation. Here the salpingotomist after all his triumphs rested, and became, like the theorist whom he displaced, an obstacle to advancement. Established error gave way before the logic of the facts that he had demonstrated. Had he stopped there the advance would have been borne without a regret, but he did more. He obliterated the very idea of cellular inflammation as a cause of pelvic disease, and brought the term under such contempt that one who had regard for his reputation as a scientific man and a safe diagnostician among the body of the profession hesitated to admit its possibility.

After the performance of untold thousands of abdominal sections for the cure of pelvic inflammatory conditions, a vast number of which must have been useless and harmful, the more observing among this group of surgeons became aware of the fact that many of their patients were not cured, and were even made worse. Among them were numerous cases in which enormous tubal accumulations clearly indicated the operation. Masses of adhesions reformed, and uterine fixation recurred, or was not relieved.

After vaginal hysterectomy became well established and a comparatively simple operation, the mysterious obstacle in the way of success was supposed to be the uterus, and the more advanced surgeon proposed in cases in which tubal and ovarian

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disease demanded extirpation to remove the uterus, also as the really offending and now useless organ.

The facts of the pelvic surgeon had also lapsed into theory as narrow as the one that he had displaced, and equally at fault as an explanation of the total phenomena of pelvic inflammation. There are evident indications that the crude operation of tubal and ovarian extirpation as a general operation in pelvic inflammation is becoming obsolete, and that the future line of surgical relief will come from the direction of the hysterectomist.

The reaction began to revive the old idea of pelvic cellulitis. It was the old theory, but seen in a new light. It was a crystallization out of the mass of crude logic and obliquely observed facts of the old authors. But it is a now a well-defined and scientific term. We know what it is as well as what it is not. Limited in this way it is a positive advance in our knowledge of pelvic inflammation, and broadens the etiological factors of pelvic disease.

I cannot say that pelvic cellulitis has to-day a surgical status as such, and will never offer the numerous and tempting opportunities for the pelvic surgeon that tubal and ovarian disease have furnished. Here it is well to offer a few cases to assist in defining my contention, and to give you a chance to criticise my diagnosis and to object to my conclusion :

Case I.—Mrs. M., aged twenty-two years, married, of healthy family history, was referred to me by Dr. D. H. Murray, of Syracuse, as a case of possible ectopic pregnancy. The personal history was obscure. Menstruation was regular up to November 29, 1893, and may have occurred since, but was obscured by a watery blood-stained discharge. This discharge became more free and presented the appearance of a menstrual flow again on December 8th. It was followed by a discharge of like character.

I examined the patient December 15th. The discharge was present to the extent of soiling one napkin a day. There was tenderness and pain in the right iliac space, and by external palpation a semi-fluctuating mass could be felt occupying the

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iliac fossa. By combined manipulation this could be traced downward on the pelvic wall, being closely confined to the right side; it was slightly below the vaginal juncture of the uterus, not obliterating the lateral cul-de-sac, but extending into it from the pelvic wall. While uterine movement was impaired, the organ was not firmly fixed. The left side of the pelvis appeared free from disease. The pain was of a character to confuse her attending physician and his counsel; it was intermittent and irregular. It was never of an explosive character, but severe enough to demand the moderate use of morphine by the mouth. No decidua was cast off at any time, nor was there any sign of rupture among the painful symptoms of uterine contractions.

The rectal examination was very painful, which was partly accounted for by a rectal abscess which had been opened by Dr. Murray, early in September, 1893. From this direction the mass was observed firmly fixed to the pelvic wall, reaching to the left, up to, but well-defined from, the uterus. That downward prolongation into the lateral border of the right vaginal cul-de-sac could be caught up between the exploring fingers in the rectum and vagina.

The temperature record was not known at this time, but while in the hospital prior to operation there was a mean range of morning 98.5° to 99.5°, and evening 100.5° F. Dysuria was present at irregular intervals, and the bowels were confined. I could not admit that the theory of tubal gestation was correct even with the written opinion of a professor of gynecology that it was such with "primary rupture" and that immediate operation was imperative. As the pain was persistent and the patient bed-fast the necessity of operation was evident. I failed to see the need of a theoretical diagnosis. She was admitted to the Central New York Hospital for Women and the operation was performed.

The tubes and ovaries were healthy, the ovary upon the right side being attached by some easily separated adhesions to a mass occupying the right side of the pelvis, extending downward deeply and upward over the brim into the fossa. Omental and slight intestinal adhesions were separated extending upward to the neighborhood of the caput coli. While working downward into the pelvis to find a line of cleavage, my fingers penetrated

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a cavity, followed by a free gush of pus which flowed over the pubes. It was an old abscess lying between the folds of the broad ligament and the cellular spaces of the right pelvic wall. Numerous trabeculæ were broken up in the cavity of the abscess as the finger explored its deeper parts. The tube and ovary upon the right side were removed on account of their near proximity to such an accumulation of pus, the cavity of both abscess and pelvis was washed out and a drainage-tube was inserted into the abscess cavity. Recovery was without incident, patient has enjoyed good health since. This abscess could have and the been opened and drained from the vagina with much better results, and I think if I had had the advantage of longer observation of the case an abdominal operation could have been avoided. The adhesions observed in no way indicated cœliotomy as such complications may be safely left to take care of themselves.

Case II.—Mrs. C., referred to me by Dr. J. W. Sheldon, aged forty-nine years, married twenty-eight years; two children, one surviving twenty-seven years old. Previous history obscure. Chronic invalidism for several years, and the disability referred to the pelvic region. Ceased to menstruate at forty-five years. Thinks that she has not been well since, and has been able to do but little housework as she was often subject to pelvic pain and tenderness and bloating of the bowels.

*Present condition.* Patient much emaciated. On examination the pelvis seemed filled with a mass which appeared to be made up of adhesions, occupying both sides, but in greater mass to the left, reaching nearly to the crest of the ilium. The uterus was firmly fixed. On rectal examination the uterus appeared to be buried in a mass of adhesions, the pouch of Douglas being filled, and latterly, by this route, the exploring finger as far as it could reach could feel induration of the pelvic roof. Palpation in any direction was extremely painful. Defecation was very painful, attended by constipation. Nutrition was reduced to a minimum.

She was admitted to the Central New York Hospital for Women, November 5, 1893, and the first temperature tracings taken were, mean morning, 100.4° F., evening, 102.3° F. It was

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very evident that pus was lurking somewhere in the pelvis, but no point of softening could be detected. On the sixth day after admission there was a free escape of pus through the rectum. It was hoped that the pelvic mass would show some diminution and the fever abate, but while the pelvic condition was unchanged the temperature went up, and the evening rise fluctuated from 103.5° to 104° F. I soon discovered the reason. The pus absorption was more rapid and direct from the rectal surface than from the pyogenic membrane of the pus-sac, as free and frequent rectal irrigation through a double rectal canula demonstrated by a very marked abatement of temperature. Five days after this event pain of a very intense character occurred in a circumscribed region on the left posterior surface of the pelvis at a point about half-way on a line from the tuberosity of the ischium to the crest of the ilium. This pain was so severe as to require frequent hypodermatics of morphine. Circumscribed tumefaction and redness with fluctuation soon cleared up the nature of the process going on at this point.

On the twenty-sixth day after admission, under the influence of local anæsthesia, an incision was made at this point. It required a bold dissection of over three inches in depth before pus was reached in the region of the ischiatic notch. A drainage-tube was inserted penetrating inward and upward about four inches, which was irrigated several times daily. From this date the patient rapidly improved. The great mass occupying the pelvic cavity and the iliac fossa to the anterior superior spinal process rapidly diminished. The temperature regained the normal, the appetite returned. Discharge of pus from the rectum gradually ceased. The drainage-tube continued to discharge pus for thirty-four days, when it was removed, and the opening rapidly closed.

From this on the recovery was phenomenally rapid. The pelvic mass and adhesions disappeared, and at no time were there any signs of a return of the extensive inflammation that had occupied the pelvis. Uterine mobility was restored by the time she was discharged from the hospital after a residence of four months.

Cases of like character are within the experience of all, and

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they are of never-failing interest as re-affirming the old surgical rule to evacuate pus wherever found, and also as showing that if the intra-pelvic cellular spaces are thoroughly drained mere pelvic adhesions may be left to take care of themselves without any tinkering through the abdominal wall.

CASE III.—Miss H., aged twenty-nine years; a spare brunette; servant and dressmaker; robust up to the developing of puberty at sixteen, at which time dysmenorrhœa appeared, and she gradually became a neurotic. Each period was a severe trial to her vitality. Her family history was good. Her uterus had been dilated, and curetted, and treated by many physicians.

She came to me for treatment November, 1893. She was much emaciated, her appetite very poor; she was constipated, and had severe flatulent indigestion. There was no history of peritonitis or of acute illness of any kind. The pelvic region was too sensitive to examine without an anæsthetic. The pelvic organs were fixed by adhesions. No enlargement of the tubes or ovaries could be made out by bimanual palpation. The indurated pelvic roof seemed to extend downward on the left side of the pelvis, the vaginal wall being thickened about an inch below the lateral vaginal fornix. The same thickened, indurated condition continuous with the upper portion of the lateral infiltration extended into the posterior vaginal cul-de-sac, where it showed as a distinct ridge encircling the posterior portion of the cervix.

Through the rectum this extension of pelvic exudate could be distinctly palpated by the exploring fingers in both passages, as situated in the recto-vaginal wall, and as continuous with the exudate above. The uterus was retroverted and firmly fixed. As she was acquiring the morphine habit it was thought best to remove the ovaries in the hope of arresting the monthly crises.

She was admitted to the Woman's and Children's Hospital of Syracuse, and the operation was done. General pelvic adhesions. Tubes clubbed and distended with sanious fluid. Recovery was prompt, and she was discharged in three weeks. Three months later she came to me. She had a slight irregular discharge of blood every three to five weeks without the former menstrual pain and tenderness. Examination revealed the same vaginal

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condition, fixation, infiltration, tenderness, and pain. I thought that something could be done by incision through the vaginal extension of the pelvic exudate with drainage. This was done through the mass to the left and extended into the mass posterior to the cervix. At this point the finger was forced through the tissues keeping posterior to the cul-de-sac of Douglas so as not to enter the peritoneal cavity.

I was quite surprised at the ease with which the finger penetrated the tissues in this direction and expected to find pus, but nothing of that kind appeared; bleeding was free. A strip of iodoform gauze was packed in the track of the exploring finger. The gauze was removed every third day, and in this way the opening was maintained for about three weeks, when the gauze could no longer be inserted. During this period a bloody serum exuded amounting to quite a quite a stain upon a napkin removed twice a day. While free vaginal douching was employed daily, the results were very good. Pain, tenderness, and the bloody uterine discharge disappeared, the thickened vagina became soft, and the uterus although retroverted was becoming mobile.

These cases are selected out of many as having an illustrative bearing upon several points involved in this paper, and not in any sense as proof of the condition known as pelvic cellulitis, of the existence of which, I take for granted, no fair-minded and careful observer has the least doubt. One of the misfortunes of surgical specialism is to develop a tendency to mental restriction. One cannot live, think, and act in a narrow line for years without limiting one's mental perspective. It is a matter like this that appears to have entered into this question. The pelvic surgeon seems to have ignored the possibility of any wider area of pelvic inflammation than that which attacks the peritoneum, the tubes, or the ovaries.

This was the status of pelvic pathology through a period of splendid surgery, of which, I believe, we are beginning to see the decline. Here and there a pelvic surgeon, as some of those who make a specialty of exploring the pelvis through the abdominal incision wish to be called, became awake to the

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fact that there was another morbid entity than peritoneal adhesions, sacculated tubes, cystic ovaries, and pus-sacs, and that notwithstanding the thorough and aseptic removal of these conditions—and no one with any experience can doubt the propriety of the operation—the patient did not get well. The pain, the neuroses, the adhesions, and the disability continued in full force. Several surgeons, who candidly admitted these negative results in published articles, and recommended uterine extirpation, which I do not hesitate to admit was a proper conclusion, reached it, in my opinion, upon false premises. They accused the most inoffensive organ in the female pelvis, unless it be the seat of malignancy or of neoplasms, namely the uterus, of being the offender. It is true that it had become a superfluous organ, and also true that some prompt recoveries followed its extirpation after tubal and ovarian operations. I believe that the failure to cure after the primary operation was due to an associated pelvic cellular inflammation, and not to the fact that the uterus was left intact.

In my public and private practice I have had abundant material, and have operated liberally, and have often been disappointed. Some of the conditions found were very misleading. Enormously distended tubes, ovaries incarcerated in masses of exudate and adhesions, omental, intestinal and uterine, appeared to account for the condition of the patient. Thorough removal of the offending conditions and prompt recovery from the operation failed to relieve the patient. My experience in Case III. was repeated several times and always with good results. But this method was tedious, lacked precision, exposed the patient to the danger of secondary infection, and was too limited in its action.

I have always been found in the ranks of the conservative pelvic surgeons, but I became convinced that we did not go far enough, and that the uterus ought to be removed. Not because it was diseased, but by the removal of the organ we opened up the cellular pelvic spaces and secured the necessary

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drainage to relieve the cellulitis. Hysterectomy in my opinion affords the only route to this area of intra-pelvic inflammation.

I am also convinced that it is hysterectomy of a certain kind. Preferably it is through the vagina, but it is not the operation by ligation, but by the forceps or clamp. It makes a wide difference whether all the spaces are occluded and surfaces are brought into contact by sutures and inclusive ligatures, or are left open to free drainage by the removal of the forceps which secures this result by the retracting tissues. The French method is now developing along this line, and, if we are correctly informed, with brilliant results.

If I am asked, ought this method to be practised in all cases? I emphatically answer no. We may have pelvic peritonitis with its resulting evils without associated pelvic cellulitis. We may have many forms of tubal disease imperatively demanding operation unattended with inflammation of the pelvic cellular spaces, and we may have the latter without the former.

What I am contending for is a scientific recognition of the various forms of inflammation, and I believe that we may reach a reasonable differential diagnosis, though not in all cases, for I have a profound respect for the difficulties of pelvic diagnosis by palpation. But in very considerable number we may come to a safe conclusion. I have a simple diagnostic sign, and when I find it I feel very sure of the presence of cellular inflammation. In this tissue, in the pelvis or elsewhere, inflammation may extend by continuity into any part made up of like histological elements. We have inflammation of the broad ligament extending into the iliac fossa laterally, and downward through connective-tissue spaces into the vaginal septum, and through the sacro-pubic areolar process to the lateral surfaces of the vagina (Savage). In these locations the infiltrated cellular spaces can be brought up between the finger in the rectum and the thumb in the vagina as thickened indurated and doughy masses. This condition may extend downward

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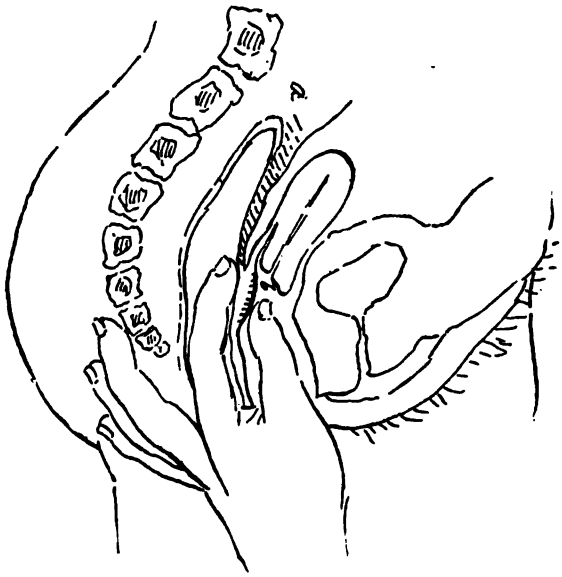
an inch or more. It may extend to the lateral surfaces of the vagina, disappearing to the touch above the limits of that canal, and shows on palpation as a slightly elastic mass firmly fixed to the pelvic wall, smooth and glistening, the vaginal rugæ being obliterated. I have observed that these lateral

FIG. 1.



Exudate at *a* in broad ligament extending downward in recto-vaginal septum at *b*.

extensions reach downward further than those situated in the recto-vaginal wall, in some instances, nearly to the vestibule. This condition is a true cellulitis, and indicates, and is concurrent with, cellulitis higher up in the pelvic space; but it is not associated with pelvic peritonitis, or salpingitis, or oöphoritis.

While this vaginal cellulitis has been described I have not seen it referred to as an index of the character of the primary pelvic inflammation. Unless existing in a very marked degree it cannot be positively detected by vaginal examination

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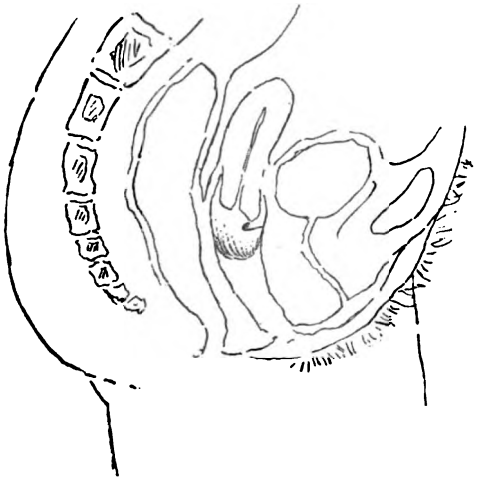
alone, but by combined vaginal and rectal palpation. We must remember, however, that there is no reason why pelvic peritonitis and cellulitis may not coexist. Having this possibility in view, the symptom which I have just described would prove the intercurrence of cellular inflammation.

FIG. 2.



Exudate extending downward from iliac fossa into the left lateral vaginal wall.

When this is well-established I believe that thorough surgical treatment requires hysterectomy, as well as the older operation of removal of the tubes and ovaries.

## DISCUSSION.

DR. A. LAPTHORN SMITH, of Montreal.—I must say that I agree with Dr. Van de Warker's statement that the pendulum has swung a little too far in the direction of intra-peritoneal pelvic disease. Although I think that the cases in which the disease is outside of the peritoneal cavity are much more rare than those in which it is inside, we do have cases of genuine pelvic cellulitis, but we meet much more frequently with cases of disease of the tubes and ovaries without very much dis-



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ease of the broad ligaments. A case occured to me in which the pus-tube had existed for some time. I was called to see the patient, and was arranging for an operation when the tube burst into the broad ligament. Then I was called out of town, and another doctor attended to the case. Six months afterward that patient came to me with the pus escaping into the vagina, and I subsequently removed an enormous pus-tube, requiring more time than any operation which I have ever done; it was necessary to tie off the whole broad ligament on that side in order to get the tube out. The patient recovered. This was a case of genuine inflammation of the cellular tissue, succeeding rupture of a pus-tube into it.

In another case the cervix was lacerated during confinement. The cellular tissue adjoining became infected, and there was a large collection of pus, which I opened and drained by means of a piece of rubber drainage-tube, with a cross-piece passed through one end of it which keeps the tube in when expanded, a device which I recommend very highly. It remained for ten days, was frequently washed out, and the patient made a good recovery. In that case there was no disease of the appendages whatever.

Dr. J. Whitridge Williams, of Baltimore.—There can be no doubt in the mind of anyone who has seen a considerable number of autopsies on women dying during the puerperium and with certain other diseases that true pelvic cellulitis does occur. I have seen several cases in which a definite diagnosis of pelvic cellulitis could be made at the autopsy, with absolutely no involvement of the tubes or ovaries. I can recall two in which there was no doubt at the autopsy as to the presence of pelvic cellulitis, both patients having died during childbirth with symptoms of sepsis. While, then, the vast majority of cases of pelvic suppuration are undoubtedly tubal and ovarian in origin, I would like to be understood as not opposing the existence of true pelvic cellulitis.

The President.—It seems to me that the point which Dr. Van de Warker made was this: that pelvic cellulitis frequently exists as a complication of tubal and ovarian disease, and that when it does so exist the abdominal operation, or any operation

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for the removal of the tubes and ovaries, is not sufficient, but that the pelvic cellular spaces should be opened up by removal of the uterus. A cure will then be more likely to occur, and that the diagnosis can be made by palpation when this cellulitis exists along with the other troubles.

DR. VAN DE WARKER.—The President correctly states the intention of the paper.

DR. A. PALMER DUDLEY, of New York.—I only wish to mention the fact that these conditions do exist more frequently than we are aware of or more frequently than the reports would indicate. There is recorded in Gaillard's Journal a case operated upon by me in the San Francisco Hospital in 1883, for removal of a ten-pound ovarian tumor complicated by pelvic abscess, but entirely separate from it, the other ovary and tube being quite normal. I removed the tumor and drained the abscess through the abdominal incision, for, as the woman was almost dead, I did not care to prolong the operation by approaching through the vagina. It was a typical case of tubo-ovarian disease entirely independent of pelvic disease, no connection existing between the two, and both developing within three weeks after an accident. The tumor had never been noticed before the accident, so that there was rapid filling of the sac during these three weeks, and development of cellular inflammation between the vagina and rectum beneath Douglas's cul-de-sac. It was a very interesting case.

DR. JAMES H. ETHERIDGE, of Chicago.—The reader speaks of the coexistence of pelvic peritonitis and pelvic cellulitis. I think that it can be best stated in this way, that pelvic peritonitis, *i. e.*, perimetritis, very often exists *with* cellulitis. Much more often do we find the existence of peritonitis without cellulitis.

Concerning the differential diagnosis between the two by vaginal examination, I think that this position can be well taken, namely, that in examining the mass through the vagina we shall find in cases of perimetritis with cellulitis a smooth, unbroken surface along the pelvic plane reached by the finger; whereas if there is perimetritis alone we shall find a sulcus between the wall of the pelvis and the inflammatory mass.

One point further. In cases demanding hysterectomy, we shall

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find that the accompanying cellulitis which is often met with is better drained by the vaginal operation than by the abdominal. Therefore we shall find in many cases of vaginal hysterectomy for inflammatory diseases of the appendages and uterus that the cure will be much more brilliant and much more rapid than it would be had an abdominal operation been performed.

DR. W. GILL WYLIE, of New York.—One can hardly say what he would like to say on this subject in so short a time, but as I was one of the guilty men who started the new idea, and advocated it, that what we had been taught to regard as chronic cellulitis was really a local peritonitis around diseased tubes and ovaries, it would seem that I ought to say a word on this occasion. But I never said that this was so in more than about nine cases out of ten which passed as cellulitis at that time. In my first paper on the subject I stated that there were many cases of acute lymphangitis and phlegmonous inflammation in which the pus was found in connective tissue and which could be called cellulitis, but that as a rule these cases were secondary to a peritonitis, or that if the pus was situated high up the tubes and ovaries were implicated. And I believe that this position is practically sustained to-day. It is true that, as in anything else which men take hold of under the influence of enthusiasm and rapid work, one will make mistakes in the beginning. And I suppose that I made some with many other operators. But I do not think that the cloak of conservatism which many are throwing around themselves is fair, because without enthusiasm a deal of progress would have been lost. I do not believe that enthusiasm should be suppressed, but simply guided, and those who guide it are not the men who deserve all the credit. I believe that the men who deserve some of the credit are those who probably took radical views and had the courage to carry them out in the face of opposition. It is very easy now, when the thing has been practically settled, to make statements. But I claim that even my first staatements were not far wrong, for take a hundred cases of pelvic abscess and operate and you may not find one which would be classed as a pelvic cellulitis. We proved this in Bellevue Hospital. If pelvic disease is present, it is apt to be found as a sequel to disease of the tubes and

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ovaries. The whole question is easily referred to now, but until certain men took hold of it in this country hardly a start had been made. Even general surgeons must acknowledge that their first lessons in abdominal surgery were preceded by the successful work of gynecologists, carried on in the face of the strongest opposition of the profession.

Dr. Van de Warker was requested, in closing the discussion, to point out the diagnostic point between pelvic inflammations without cellulitis and those complicated by this condition.

Dr. Van de Warker.—It gives me great pleasure in closing this debate to express my thanks to Dr. Wylie for his brilliant contributions to pelvic surgery, and for his clear demonstration of what I admit to be true—the greater prevalence of pelvic peritonitis as compared with pelvic cellulitis, for the majority of the conditions found are as he states. I think that he is one of the brightest stars in the firmament of brilliant surgeons who have adorned American surgery in this particular field, and I am proud to say that I am his humble follower in pelvic surgery. But what I have to do in my paper I think has been accomplished. Not but that this undercurrent of truth had been running all through the history of pelvic surgery, but what I aimed to give was public expression of the association of pelvic cellulitis with pelvic peritonitis; that they may exist separately or coexist. And if that point has been attained, I have to thank the present debate which has followed my paper for somewhat of the assurance that this is true.

Now for that diagnostic sign (see Figs. 1 and 2). Lying behind the recto-vaginal junction and in the posterior vaginal wall is a mass which can be picked up by the finger. It is connected with the exudate extending down from the broad ligament into the recto-vaginal septum. In cases of pelvic cellulitis this cellular space becomes infiltrated and can be palpated in that way between the vagina and pelvic wall, and can be demonstrated still further by manipulating it between the finger in the rectum and the thumb in the vagina. There may also be lateral expansion of the infiltrate. This may sometimes extend as an annular ridge partly encircling the vaginal neck and connecting laterally with a mass extending downward on the lateral vagi-

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nal or pelvic wall. Caught up between the exploring fingers it gives to the touch the sense of a smooth elastic mass like an infiltrate. Generally both masses are not associated. My contention in its simplest form is this: That when this symptom is present we have pelvic cellulitis, and that the usual operation for the removal of the tubes and ovaries, no matter how seriously diseased, or how imperative the operation for their removal may be, the patient will not be cured, as there is an extension of the pelvic inflammation beyond the reach of such operative procedure. That further measures are necessary to drain these intra-pelvic cellular spaces, either by vaginal incision and drainage, or by hysterectomy.

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# PREVENTION OF UTERINE DISEASE DUE TO CHILD-BEARING.

By W. Gill Wylie, M.D,
*New York City.*

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Most of my work as a physician and surgeon has been devoted to effecting cures of diseases as we find them in women after child-bearing, but the first ten years of my practice was that of a general practitioner, and I still take a limited number of selected cases of obstetrics, but sufficient to make the matter one of great interest and more or less of a study. During the past fifteen years, which I have devoted mainly to the development and improvement of the art of gynecological surgery, there has been a great advance in this work, so much so that in our annual meetings papers on any other subject than surgical gynecology are rare. Besides, it seems to me that we have reached the point where we should at least attempt to divert some of the immense interest and almost general devotion manifested not only by men especially trained in gynecology, but by the profession at large, to what may well be termed fashionable surgical gynecology, to that higher plane of our work as physicians, namely, to the prevention of disease. To-day, as physicians and artists in surgery, we can readily relieve, and in almost all cases cure, the special diseases of women promptly and accurately with very little risk to life, and we can well afford to turn our attention and direct our efforts to the prevention of such diseases. Fifteen years ago many important diseases of women were improperly treated, and the practice of the art of gyneco-

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logical surgery was of very doubtful practical value to our patients; but to-day there are scores of accomplished artists in our ranks who can and do effect cures of these diseases, and there are many thousands more of the profession who, if they keep up their interest and their readiness to operate, should become expert or kill many women. How much better it would be if we could succeed in creating an almost universal interest, and one might say fashion, in our profession to prevent many, yes, most, of these cases! How much greater and more real our help toward the health and happiness of womankind would be!

Suppose one had the power to direct the immense amount of energy, interest, and work now so intensely and enthusiastically devoted by not only all specialists in gynecology, but one might say by nearly all of the profession who think themselves capable and are so willing and anxious to sew up lacerations, remove ovaries, and do hysterectomies, etc., to the prevention of diseases of women, what an amount of good to mankind and especially to women would result! The work might not be so exciting, nor so brilliant, nor immediate in tangible results, but much greater in the highest sense of the word. We shall endeavor to enumerate some of the plain and practical fields of work in which much of this great force might be made really useful.

As physicians we can do much by urging parents to keep girls in good health, especially during the time when the generative organs are undergoing rapid development, say from ten to seventeen years of age. These organs are not essential to the life of the individual and are the last of the organs to develop; therefore they are the first to suffer if the forces essential to full development are used up by excessive work, deficient food, or want of fresh air and exercise, especially if the work or the life uses up or expends this force in mental or emotional excesses. In fact, it seems absolutely essential to the full development of the generative organs of a woman for her to have a surplus of force over

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and above what is needed for the uses and development of her other organs.

Imperfect development of the generative organs usually results in a small flexed uterus, with catarrhal erosions and chronic endometritis, causing leucorrhœa, dysmenorrhœa, and, later, sterility or lacerations of the cervix, subinvolution, displacement, etc.

It is the duty of physicians to impress upon newly married women the necessity of continuing in good general health during pregnancy. By keeping the bowels regular and taking some special food such as would be easily digested, both the mother and child will reach the full term in good physical condition.

By actual experience I have proved that by careful feeding and attention to the general health during pregnancy, and by the induction of premature labor when indicated, it is practical to avoid craniotomy or Cæsarean operation in most cases of deformity; and even where the uterus is imperfectly developed, or the os eroded by disease of the follicles and glands of the mucous membrane, by inducing labor from one to three weeks before full term we can not only avoid difficult labor and laceration of the imperfectly developed or diseased cervix uteri, but the forceps become, except in rare instances, unnecessary. If the pelvis is below the average size, or if there is any deformity; if the child's head is excessively large and the woman small; or if there is imperfect development or chronic disease of the cervix, I do not hesitate to induce labor before full term, especially in primiparæ. If the first labor occur after the woman is thirty years old or more, it is best to induce labor a week or ten days before full term. About the end of the seventh month, or before the end of the eighth month, I invariably examine, to determine the condition of the parts and the position of the head. As a rule, one can easily perform external version if he finds the head not presenting in a normal position.

I do not advise induction of labor without a good reason,

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but I know that it can be done by an expert who understands and practises cleanliness and the use of antiseptics with practically no more danger to either child or mother than labor at full term. Not only is the labor when properly induced shorter and easier on account of the relatively smaller child, and softer and therefore more malleable head, but as the time of labor is positively known, everything is in readiness, and both the nurse and doctor are present without fail, and cleanliness is carried out with more accuracy, and accidents from hemorrhage, etc., are more certainly avoided. The method of inducing labor which I have found to be practically the best in my hands is an old one. Observing all the rules of cleanliness, I use the tincture of green soap to wash not only the patient, but the hands of the nurse and doctor, supplemented by a solution of hydrarg. bichloride 1 to 3000. If the vagina is small, or if the induction is more than a week before full term, I move the patient's bowels well, and by the use of a clean and new rubber colpeurynter I distend and soften the vagina for several hours or a day before inducing labor. I then take an old-fashioned gum catheter, a new one, wash and disinfect it, partly fill it with iodoform, and start the introduction with a properly curved stylet so as to be able to pass the catheter up in front of the presenting head. After giving it a fair start the stylet is withdrawn and the catheter carefully passed up till it is all well within the uterus, lying between the membranes and the anterior wall of the organ, with from one to three inches of the lower end in the vagina. The catheter is introduced at bedtime, and usually two ounces of castor-oil given by mouth. One must, if possible, avoid rupturing the membranes when introducing the catheter. With rare exception labor pains will begin the next morning, and when labor is fairly started the catheter is withdrawn. I have tried the glycerin injections and other methods, but prefer the one given above. Glycerin injected into the pregnant uterus, when it remains will induce labor, but it often causes alarming pain in the head and intense oppressive sensations about the chest;

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besides, the labor is induced too rapidly and the tissue may not have had time to soften and properly dilate.

Prevention of sepsis after labor or abortion is now so well understood that it is only necessary to urge the simple but efficient means used in almost all our lying-in hospitals and used in private practice by many of the profession. In 1870, twenty-five years ago, when I began practice as an interne in Bellevue Hospital, the death-rate in the lying-in wards from puerperal fever was every year from 5 to 25 per cent. of all women delivered. To-day many hundreds of consecutive cases are delivered in our best lying-in hospitals without a death from sepsis. In the spring of 1872, when it was my turn to take charge of the lying-in wards then in Bellevue Hospital, I had become a convert to the germ theory of disease and had been fully imbued with a faith in antiseptics by my old preceptor, the late Dr. James R. Wood. By throwing away all sponges and old oil-cloths, and personally attending each case in all its details of cleanliness, and treating each case with all the care that I would bestow upon a wound, I delivered all my forty-one patients without a death from sepsis. In July, 1872, I had the advantage of seeing the great Lister at work in Edinburgh, and brought home with me to New York his methods and appliances for treating and dressing wounds, making practical application of his teaching from that day to this on all women whom I have ever attended after either a labor or abortion. So far I have never yet had a death from any cause, after either labor or abortion, in my practice, and only one patient had sepsis which endangered life. To-day I find that there are many of my colleagues under forty-five in the profession who have had for many consecutive years the same good fortune.[1] Thirteen years ago, in a paper read before the New York County Medical Society and published in the *Medical Record*, I gave

[1] I must confess that all my cases, except in the very first few years of my practice, were among the best class of well-to-do women, able to pay for the best nursing and to compensate me for the closest attention.

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an account of my method of preventing and treating sepsis after labor and abortion. To-day I use the same methods, somewhat simplified. I shall briefly relate the means I now carry out in every case :

PREVENTION OF SEPSIS AFTER LABOR OR ABORTION.—Before agreeing to take a case it must be stipulated that I am to have full charge of the case in every sense of the word. The nurse must be one of my own training, or at least selected by me. Before labor is expected the nurse must be in the house with all medicines, instruments, etc., likely to be needed on hand. The room to be used is cleared of all stuffy furniture and hangings and given a thorough cleaning; a sheet or two is tacked over the carpet where the new, cheap and strong cot which is to be used for delivery is placed; all towels, bed-clothing, and linen is to be especially laundered, so as to be practically sterilized, and kept in readiness. On or before the first indications of labor the patient is given a complete bath if there is time, or, at any rate, the vulva and vagina are well scrubbed and washed with tincture of green instead of ordinary soap, and the parts washed off with 1 to 3000 solution of hydrarg. bichloride. The nurse must have on a clean wash dress, and I put on a surgical gown; my hands and the nurse's are always washed with tincture of green soap and dipped in a solution of bichloride each time before examining the patient. During and after labor a solution of bichloride, 1 to 3000 or 4000, is used to wash off the vulva. If there is time the bowels are well moved by castor oil, and the rectum always emptied by enemata; all instruments used have been sterilized by boiling, and put in a solution of 1 to 40 carbolic acid before being used. Any hemorrhage is checked by emptying the uterus of placenta or clots, and, if necessary, by ligation of the circular artery when the cervix is torn or by sewing up the perineum when torn. Any considerable laceration of the perineum is repaired. After labor, except in cases complicated by severe hemorrhage or lacerations requiring sewing, the patient is made to sit up to

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pass water or when the bowels move. For a full week the antiseptic napkins or absorbent pads are kept over the vulva and changed every few hours as required by the discharge, and each time the bowels move or the patient passes water the vulva is washed off by means of a Davidson syringe and solution of 1 to 3000 of bichloride of mercury. This is kept up faithfully for seven days after labor. On the sixth or seventh day the patient sits up out of bed. On the tenth day she is carefully examined to determine the condition of the parts, the character of the discharge, and position and condition of the uterus, and to decide if any local treatment is needed to insure normal involution and prevention of subinvolution of the uterus, relaxation of the ligaments, and displacements of the organ. No vaginal douches are given after labor unless instruments have been used to deliver, or hands have been introduced into the uterus, or there is a rise of temperature or an odor to the discharge.

I shall not discuss the questions as to the methods of delivering the child in abnormal labor, for the art of delivering the child and membranes is well understood and better taught by those who have devoted more time to, and have had much more experience in, the art of obstetrics.

TREATMENT OF ACUTE SEPSIS OCCURRING AFTER LABOR AND ABORTION TO PREVENT ITS EXTENSION OR PERMANENT ILL-RESULTS.—In the paper already referred to I gave fully my views and methods in the local treatment of sepsis after labor and abortion, and would be content here merely to state the method, but I am satisfied that what may be called the fashionable methods now resorted to and so ably advocated by some of my colleagues have a very radical defect when applied to any but fresh and rather superficial septic uterine infection. I mean curettage and gauze-packing, as it is called. Of course in all cases in which it is possible the uterus should be emptied, but there is an erroneous belief and teaching now very prevalent, namely, that sepsis is caused by retained placenta, and all that is needed

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to cure is to remove it with the curette and pack the uterus with iodoform gauze. It is true that retained placental tissue and clots form a very favorable nidus for septic germs, and undoubtedly make sepsis more liable to increase when it is present, and lessen the chance of the normal tissues defending themselves, but uninfected placental tissue will not cause sepsis. Of course it should be removed, and it is very important to remove or to give free drainage to all effete tissue, when once the septic germs become active, if we are to treat the case successfully; but sepsis will, as we well know, start up and kill when there is no placenta present. My belief is that septic germs must have some effete material, or at least defective organic matter, to develop and thrive in and cause the kind of sepsis which first infects a puerperal woman; but the presence of such material alone will not cause sepsis.

Now, as to the use of gauze as a drain in ordinary cavities where the secretions or excretions are thin and watery. Loosely packed gauze drains well, but the uterus in the condition is different. It has in it many glands and follicles which secrete or excrete, especially when irritated or inflamed, a thick, viscid material; after a few hours this soon chokes drainage through gauze, and what escapes passes around and in spite of, and not through, the gauze. Besides the uterus is a contractile organ with a very powerful sphincter guarding its mouth, and as soon as contractions begin this constricts the gauze and obstructs drainage. I admit that in all cases the uterus should be carefully emptied, but I prefer the combined method of the hand or fingers and forceps where this is practicable. After removing with the forceps all large pieces, I very carefully run a large-sized curette over the surface to bring away small adherent pieces; but soon after labor and abortion, especially when rendered soft and patulous from sepsis, it is an easy matter to push a small curette entirely through the uterus, and it is not an infrequent occurrence. Again, I admit that soon after the first chill and rise of temperature

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from puerperal sepsis in most cases, if one thoroughly empties the uterus of all clots and retained placenta, and all material favorable to the rapid development of sepsis, that one good antiseptic washing out and loose packing with gauze will check the sepsis, and in many cases effect a cure; but, where there is a failure to effect a complete emptying of all, or almost all, of the effete material, or at least that part of it already infected by sepsis, curetting and the preceding method of gauze-packing will not effect a cure even when supplemented by one washing out; and when it fails and the gauze is left in over twelve or twenty-four hours it increases the danger to life by tending to keep the septic material in the uterus, and where there is a close packing with gauze it tends to force the sepsis into the sinuses, veins, or Fallopian tubes. In cases of sepsis which have existed for several days, the curettage and gauze-packing is much more likely to fail to effect a cure, for the sepsis has had time to penetrate deeper into the uterine tissues. Of course when the septic material has entered the peritoneum, or is located in the veins or lymphatics outside of the uterus, no local treatment of the uterus can effect a complete cure. We assume that the septic material, the centre and source of the infection, is still within the uterus and has not yet infected the peritoneum or the lymphatics and veins outside of the uterus. For experience teaches us that for many hours, and often two, three, and four days or more, in most cases the septic focus which causes the symptoms is still confined to the uterus. In all cases, unless we can clearly detect local sepsis within the peritoneum, the lymphatics, veins, or some tissue outside of the uterus, we must at once act on the assumption that it is still confined to the organ until we have tested the matter by actual emptying and local treatment of the uterine cavity. Now, I believe that the method which I proposed and practised fifteen years ago, has proved by experience and direct comparison to be more reliable than the method now known as that by curettage and gauze-packing. When called to see a case of puer-

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peral fever, it will not do to examine, and on finding a laceration of the perineum or cervix, to assume that a small, open wound, except in rare forms of septic poison, such as true diphtheria, can cause the symptoms of a severe or dangerous puerperal sepsis. After washing out the vagina and cleaning off and cauterizing with pure carbolic acid any torn or lacerated tissue a few times, unless there is rapid and continued improvement I soon begin by washing out the uterus, which will, as a rule, be found patulous and readily dilatable in septic cases, with a solution of 1 to 40 Calvert's No. 1 carbolic-acid solution. Beginning cautiously and carefully, I give the whole cavity a wash with two quarts or more, then with my hand, fingers, and forceps where it is practicable, I empty the uterus of all clots and effete material. If it is an old case, I first dilate the os well with steel dilators, but never with tents of any kind, and after running a large-sized curette over the surface to get off all small adherent tissues I swab out the whole cavity with pure carbolic acid rendered soluble with a little glycerin and water, and immediately follow this up by washing out the uterus with a hot solution of carbolic acid, 1 to 60, injecting a quart or more. If the uterus is large and very patulous I may use a large-sized Chamberlain's glass tube, but in all other cases, and after the first washing or two, I invariably use a large-sized No. 12 or 14 old style stiff-gum catheter. I introduce the catheter well up to the fundus, with a stylet in it. Then I fill the catheter with water, after removing the stylet, and connect it with an ordinary Davidson's syringe. Beginning my injection very slowly and gradually turning the catheter about in the uterus, I pump the water with full force as soon as it begins to run out of the vagina freely. I aim to completely flood the whole cavity, and use not less than from one to two quarts of 1 to 60 solution of Calvert's No. 1 carbolic acid. Immediately after the first washing out in acute or severe cases the patient will have, as a rule, a chill and rapid rise of temperature, which is undoubt-

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edly due to increased absorption from the fresh wounds by the instruments used.[1]

The reason why I use the catheter is that it can be readily adapted to any size or position of the uterus, which often contracts and flexes sharply as soon as the sepsis is checked, though poison may not yet be completely eliminated and is liable to develop again and renew itself in full force. Glass tubes often fail to reach the fundus after a few washings. Double recurrent catheter and other theoretical contrivances often fail to do more than wash out a small section of the cavity by running in at one eye and out at the other, and those fine contrivances which aim to forcibly distend the uterus or vagina before emptying the fluid are very liable to force the septic material through the Fallopian tubes into the peritoneum. It takes an expert to reach the fundus and wash out efficiently as the uterus begins to contract, for failure to wash out or to kill all germs means a relapse.

To empty the uterus and wash it out is very important, but unless the first washing is followed up by another in about one hour after the first is finished, especially if an interval of three or more hours is allowed to intervene, the treatment will utterly fail in many cases; in fact, in almost all except in very fresh and simple cases of septic infection. In from three to eight hours the germs left have found effete material in which to develop, excretions and mucus cover the surface, and almost all of the original local sepsis has been reproduced. Thus it is essential to wash every hour, until the escaping fluid is practically clear of all, especially all dark-colored, material and the temperature has fallen to normal or nearly. As the water returns clearer and clearer the temperature sinks gradually, and, as a rule, after five or six washings the temperature is near the normal mark and will remain so. If the temperature does not materially fall after five or six washings, then the fever is kept up by other sources of

[1] This rapid rise of temperature has caused many a beginner to give up washing out the uterus, prejudicing him against this method.



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septic infection, and we must find them, and when practical must operate to get rid of the sepsis.

I have tried different antiseptic solutions in washing out the uterus, and prefer 1 to 60 to 1 to 100 solution of Calvert's No. 1 carbolic acid. It is safe, does not constringe the parts, and soaks into the tissues and softens them. It is possible that the carbolic acid enters the circulation and acts favorably, but it is its local action that I rely upon. If more than six hourly washings are required to control the sepsis, I use alternately a solution of boric acid. If one will watch the urine there is no danger of carbolic acid poisoning, for the urine becomes smoky and plainly indicates that the carbolic-acid injections should be stopped or at least lessened. In old, indolent, sloughing cases I use peroxide of hydrogen or iodoform, and usually insert a large hard-rubber, inter-uterine drainage-tube. Bichloride of mercury cannot be used safely except in weak solution, 1 to 5000, and not too often; besides, it contracts the tissues and interferes with free drainage and insertion of the tube.

A Simple Method to Insure Normal Involution after Labor or Abortion, and to Prevent Chronic Endometritis, Relaxation of the Ligaments, and Displacements.—Many years ago I discovered if boro-glyceride (not glycerite or a simple mixture of boric acid and glycerin) was combined with pure glycerin in solution, 10 to 20 per cent., that we could saturate cotton pledgets with it and apply in the vagina with the best possible results, that there would be no ferment of the glycerin and secretion to cause irritation, etc., and that it would excite an immense amount of secretion from the uterine and vaginal glands when left in for twenty-four hours. I advocate the use of these pledgets twice or three times a week in the vagina in all cases in which I wish to improve the pelvic circulation, and thus to reduce the size of the uterus and relieve the congested tissues in all parts of the pelvis. I have had especially good results in cases of subinvolution after curetting and draining the uterine cav-

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ity; that it was much more rapid and certain than the prevailing plan then in use, and now so much practised, of rest in bed, hot vaginal douches, etc. Besides, by making the roll of absorbent cotton, firm and 1¾ to 2½ inches long and from 1 to 1¼ in diameter, a sagging and retroverted uterus can be readily held up in a more natural and better manner than by a hard pessary. The active circulation caused by the boro-glyceride and glycerin mixture contracts the vaginal tissues so that the cotton pledgets remain in place, and this contracted and firm condition of the tissues continue for a day or so in most cases, thus enabling the patient to go about without trouble for twenty-four to forty-eight hours after removal of the cotton, and giving time to cleanse the coagulated mucus, etc., from the vagina.

For full fifteen years I have practised and taught the use of this simple treatment in all cases after abortion, especially when there was any kind of inflammation or hardening of the uterus complicating the abortion, and in all cases after labor where one desires to insure a return of the uterus to its normal size and position in the pelvis. In many cases among the well-to-do class, in our cities at least, there is a marked tendency for women to have more or less trouble after labor. The general health is not good, or the uterus is not well developed, and the cervix is torn, and on account of the relaxed and bad general health or disease of the cervix, it fails to heal, and subinvolution, chronic endometritis, and displacements follow.

Several years ago I also discovered that many cases of melancholia and extreme nervousness and sterility are due to chronic subinvolution or enlargement of the uterus, and that when the subinvolution, or the local disease or condition was cured, the melancholia in many cases would disappear as if by magic. Some of these cases were classed as insane and were considered incurable, but were entirely relieved of all actual symptoms by reducing the uterus to its normal size and curing any existing local disease. I do not mean to say that melan-

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cholia or a tendency to disturbed mental balance is eradicated, but that enlargement of the uterus and associated local diseases will in some women—not all—cause or excite melancholia, and that a cure of the local disease will cure the abnormal mental disturbance called melancholia. This experience led me to use the boro-glyceride cotton pledgets to prevent subinvolution, especially in very nervous women who had had melancholia or other forms of mental disturbance before pregnancy.

About the tenth day after labor I examine the women locally. If the uterus is large and is crowded down in the pelvis, or if the secretions are still bloody or abnormal, or if I have any good reasons from previous knowledge of the case to believe that relaxation, subinvolution, displacements, etc., are liable to follow, I put the patient in Sims's position on her left side, push the uterus well up out of the pelvis, and apply a boro-glyceride cotton pledget of suitable size and soft, but firm enough to keep in shape. It is so placed under the cervix uteri so that the uterus cannot sink down in the pelvis nor fall backward. This is left in place twenty-four hours, then removed by the linen string tied to the proximal end. A vaginal douche of boric acid solution is given. Two days later the same treatment is applied, and repeated twice a week till the uterus is normal in size and position, which usually takes six weeks. At the end of two months after labor, if there is any laceration of the cervix complicated by follicular disease, the diseased tissue is cut away and the cervix sewed up or amputated, and the canal of the cervix is always left lined with a healthy mucous membrane. When amputation is done, the flaps to line the canal are made from the anterior and posterior lips of the cervix. If the perineum is torn, especially the inner portion that supports the lower end of the rectum, it is sewed up also.

By the simple application of the boro-glyceride the patient is able to get out at the end of two weeks without injury, and is dismissed perfectly cured at the end of six or eight weeks.

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For many years past I have followed up some of my old cases of retroversion and flexion in which I had sewed up or amputated the diseased tissue of the cervix and restored the perineum, still the uterus would prolapse and retrovert unless artificially supported. When such a case can be got sufficiently well to become pregnant, it is necessary in most cases to keep the uterus from retroverting and flexing till after the third month so as to prevent abortion. This can be safely done by the regular application of the boro-glyceride cotton twice a week or a properly-fitted Smith's pessary.

After labor the regular use twice a week of the boro-glyceride cotton pledgets in such a case for six weeks will, as a rule, result in a complete cure of all the local trouble.

## DISCUSSION.

Dr. A. Palmer Dudley, of New York.—The paper opens up a field for discussion which includes almost the major portion of gynecology. Therefore we can refer to only a few of the many points. I feel that it is my duty to differ from the reader regarding the propriety of frequent induction of premature labor, for the reason that we are talking, not only to the specialist here, but to the general profession. What is said here has great weight outside of this Society. I believe that we are putting a dangerous instrument into the hands of men who do much more obstetrical work than we, but who do not understand aseptic surgery as well.

Regarding the prevention of uterine disease due to child-bearing, it is well known that a large proportion of gynecological cases have in the past resulted from the mismanagement of labor. I think that the cardinal point to keep in mind is to avoid injuries during labor, if possible, but when they do occur to repair them at once. Do not wait until sepsis has occurred from the injury, but rather prevent it. For this reason, since the meeting of this Society in Boston, when Dr. Boldt read a paper entitled "Intermediate Trachelorrhaphy," I have endeavored to improve upon that by repairing all uterine injuries, as well as vaginal, immediately after labor. In New York during the past winter

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I reported twenty-one such cases with good results, and I believe that if you will refer back to your cases of puerperal fever you will find that the major portion of them followed injuries during labor. That, I believe, is the prime factor in cases of pelvic disease—namely, neglect of injury occurring at the time of labor.

Dr. Wylie has very properly dealt a blow at the idea that a retained placenta will always become septic. I think that is the least of the danger, for patients come to my clinic at the post-graduate hospital with retained placenta after abortion, and I curette the uterus before the class and send the patients away, and they come back in two or three days with all the symptoms relieved. The curettage and gauze drainage have cured their symptoms. Therefore I am not yet willing to concede that there is any better treatment than careful cleansing of the uterus at the time of delivery and repair of any injury to it. The parts are thoroughly cleansed before repairing the wounds. I use catgut, and therefore am not bothered with taking the sutures out afterward. The woman gets up well, without the dangers mentioned in this paper. I believe that sepsis enters the pelvic tissues through injuries of the cervix and vaginal canal, not through the corporeal portion of the uterine walls, in the major portion of the cases. For that reason I would place at the head of the list the means for the prevention of uterine disease repair of injuries.

One other point and I have finished. It is this, that even in cases of abortion such work can be done, and be done safely; and I practice it in such cases. My last patient (and this is sufficient to prove, I think, that the procedure is a good one) came into the Harlem Hospital last week suffering from Bright's disease. She was dropsical, had developed hypostatic congestion of the lungs, was spitting up blood by the mouthful, was in convulsions, and had been in labor three days. I used instruments, and delivered her as soon as I possibly could of twins. The cervix was ruptured on both sides up to the vaginal junction. I washed out the uterus with bichloride solution and sewed up the tear on both sides of the cervix with catgut. She was thoroughly poisoned by urea, and so nearly dead from hypostatic congestion

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of the lungs that I was obliged to keep her in hot packs for two days, but she recovered, and there was perfect union of the injured cervix.

Dr. T. A. Reamy inquired of Dr. Dudley to what extent the cervix had to be lacerated to justify him in the immediate operation.

Dr. Dudley.—I am accustomed to deliver my patients upon the side. After every delivery I introduce a fair-sized Sims's speculum and inspect the cervix. If I find a tear an inch in length I repair it. I have introduced as many as four sutures on each side of the cervix under such conditions, and have had the pleasure of examining these patients time and again subsequently, and found them as normal as if they had not borne a child.

As I have said, I believe that we have gone far enough with capital surgery. We have listened to the successful results of hysterectomy, during the last two days, but little has been said in the conservative line which would help women to escape such brilliant surgery. One gentleman tells us of taking out 403 uteri, with 9 deaths. I believe that the line of work in the future will be to save. The duty of the physician is to cure and to save, not to mutilate and to remove.

Dr. H. P. C. Wilson, of Baltimore.—Just one point. I must say that I have never used the curette after labor. At the first meeting of this Society in Boston I read a paper on "The Hand as a Curette in Post-partum Hemorrhage," and from my success with it in this condition I have been led to use the hand, with one or two fingers in the uterus, whenever a curette is necessary after labor. If after labor I see any unpleasant symptoms arising which lead me to suspect that the woman may have septic trouble, I at once disinfect my hand, pass it into the vagina, and my finger into the uterus. I use the sense of touch to tell what the condition is, especially whether any portion of the placenta has been left, and if necessary I thoroughly curette the uterus with my finger-nail. I feel that by such means one can judge and act more intelligently than with the use of the curette. I can determine more accurately whether there is any trouble due to retained placenta.

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I shall merely allude to one other point. I have never packed the uterus after using the curette. I believe that the better practice is to leave the canal freely open, with nothing to obstruct the discharges from the uterus—not to insert a tampon of any kind. If necessary, wash out the uterus three or four times a day with warm sterilized water, seeing that the fluid reaches the fundus and that nothing obstructs the return flow.

Good nourishment, perfect cleanliness, thorough and frequent washing out of the uterus is the best treatment.

Dr. William T. Lusk, of New York.—I do not rise to make any criticism, but there is one fact which it seems to me ought to be thoroughly impressed upon the minds of the profession. In most cases of what is called puerperal fever the inflammation starts from the uterine cavity, and is due to streptococci upon the mucous membrane. What happens? When the mucous membrane is invaded it causes a stream of white blood-corpuscles to be poured out upon its surface to form a barrier against the entrance of germs. Now, if you will let that patient alone, if you will not douche, if you will not curette, but let Nature do her work, you will have not only nine cases out of thirteen recover, but you will have thirteen cases recover. But suppose you take the curette and dig away at the mucous membrane. A gentleman stated at the New York Obstetrical Society not long ago that he always, when a rise of temperature took place, used the curette—scraped away the mucous membrane. He must do a great deal of mischief. Some of his patients may survive, but he loses some who ought to get well. When you break down the barrier which Nature is forming, you open up channels through which streptococci penetrate the uterine wall, and when they have once gone beyond the mucous membrane they are beyond your reach. Then your douche would have the same effect upon the condition of the patient as a solution of carbolic acid might have upon an erysipelas of the leg.

In most of these cases there is temperature running at its highest to 102°, 103°, possibly 104° F., at a certain hour of the day for perhaps two or three days, but some time during the day there is a remission. The pulse may be 120, or, if it exceeds this, it is only for a few hours. All of these patients get well if

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they are let alone. Some of them get well if they are curetted, tamponed, and douched every three hours.

DR. J. WHITRIDGE WILLIAMS, of Baltimore.—I am delighted to hear Dr. Lusk make these statements. I have made similar ones several times here in Baltimore, and have been criticised for them. I can thoroughly indorse what Dr. Lusk has said from a bacteriological standpoint. I have devoted some little attention to the bacteriology of puerperal sepsis, and can say that Dr. Lusk's views coincide, not only with my own results, but also with those of German observers.

In dealing with puerperal sepsis we have two classes of cases to consider. In one there is a pure streptococcus infection. Here we have, generally speaking, no necrosis of the endometrium. There is a perfectly smooth surface, and, if we curette, we cannot scrape away anything. And it is probable that the streptococci have invaded the entire depth of the uterine wall before there is a rise of temperature and chill. In those cases it is folly to curette the womb, and it is folly to give uterine douches of any kind.

On the other hand, there is a class of cases with profuse discharge and high temperature. These are generally infected with putrefactive organisms, and are accompanied by considerable necrosis. In one case which I saw lately, I found the colon bacillus. The lochia were very fetid and contained gas-bubbles. In these instances I think that we are justified in curetting the uterus so as to remove what is readily removable, and then giving a douche of sterilized water.

In the class of cases, then, in which we have virulent streptococci, that have passed through the mucous membrane, the process will probably go on, no matter what we do, and curetting and washing out will do no good. On the other hand, where there are putrefactive organisms, all that we need do is to remove the necrotic material on the surface of the endomitrium in which the organisms are growing and the process will stop. In this class of cases, I repeat, all we need do is to remove the necrotic tissue and germs mechanically and wash out with boiled water, and the results will be just as good as when bichloride or carbolic acid solutions are used, without the risk of poisoning the patient with

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the antiseptic. I have lately seen a fatal case of bichloride-poisoning resulting from its employment as a remedial agent in sepsis.

Dr. Lusk.—I might have caused some misunderstanding. I spoke entirely with regard to pure sepsis. The fever which results from putrefactive processes within the uterus is undoubtedly benefited by removal of the necrotic tissue. I would prefer then, with Dr. Wilson, to pass my finger into the uterus and to remove any clots or bits of placenta that might be adherent. I think that is much safer than the use of the curette. Then douche thoroughly. And I would stop at that point. I think that repeated douching with the view of checking the progress of streptococci that have gone beyond the reach of the douche can do no good.

Dr. J. McCoble, of Dallas, Texas [by invitation].—In the last case in which I curetted and washed out the uterus with carbolic acid solution toxæmia resulted. Invariably after giving the injections the woman would have a chill. After ceasing to give the carbolic acid injections she had no more chills. But I swabbed out the uterus with borated cotton, and I learned through that experience that one can remove in this way shreds of membrane which cannot be washed out. And from that time to this, in cases of retained placenta, I have just taken a wad of borated cotton and swabbed out the inside of the uterus and removed shreds of membrane, which, I repeat, water will not bring out.

Dr. W. Gill Wylie.—To make one or two points clear, I am obliged to say a word in closing. I said that I would not propose the induction of premature labor if we had to go back fifteen or twenty years in our knowledge of antisepsis and asepsis, and that I recommended it to-day because I believe my saying will have little influence on the older men, while younger men know more about asepsis, and in their hands the danger will be small. It is much better than to watch a patient with a small pelvis for several months until full term, and then do symphyseotomy or Cæsarean section. Better induce labor at the seventh month and save mother and child.

As to this method of cleaning out the uterus. It is one which always provokes a great deal of discussion. It shows that the profession have not yet decided which is the best method. I tried

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a great many methods before I adopted the simple one of washing every hour. When I said that I lost two cases out of nine, it was in the class in which the disease had almost certainly extended beyond the uterus. But when I see the patient within forty-eight hours after the first chill, I can cure in almost every case. I admit that the number of cases of puerperal sepsis to-day is small—so small that one with large obstetrical experience may see but a few within a year. This shows how much progress has been made. It has not been clinically demonstrated just which is the dangerous and which the innocent form of trouble attended with chills and fever. Now, if there is only one woman in ten in danger, I prefer to irrigate the uterus in the ten, because I believe that if it is done early we can prevent further progress in all. I base this statement on personal experience. I claim that the method which has been recommended by many and followed almost universally, of washing every two or three hours, is absolutely useless. If the interval extends beyond three hours, I think that it is worse than useless.

There may be something in the new idea which has been developed in the laboratory, but I claim that it has not yet been proved. But, if you will wash out every hour for six hours in succession, you will cure your patients almost without an exception. I have cured patients who had been pronounced almost hopeless by prominent men, and who, I am as sure as I am of standing here, would have died within twenty-four or forty-eight hours without my interference.

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# DECIDUOMA MALIGNUM.

By J. Whitridge Williams, M.D.,
*Baltimore.*

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At a meeting of the Leipzig Obstetrical Society, July 16 1888, Sänger[50] reported what he designated as "two unusual cases of abortion," one of which occurred in a twenty-three-year-old woman, who aborted in the eighth week and died seven months later, with four large, soft, spongy, reddish tumors in the uterine wall and metastases of the same character in the lungs, diaphragm, tenth rib, and right iliac fossa.

He stated that the microscopic examination showed that he had to deal with a very hemorrhagic tumor made up of cells similar to those found in the decidua, and that he had before him a "malignant metastasising deciduoma," a tumor never before observed, which belonged in the sarcoma group.

He reported the case more in detail before the German Gynecological Society[51] in 1892, when several of the members, particularly Müller[41] and Hegar,[16] stated that they had observed similar cases. And in 1893 he made it the basis for an extensive monograph, which appeared in the *Archiv für Gynækologie*,[52] and in which he collected all that was known of this class of tumors and compared his case with those which had been reported since his first publication.

The year following his first report, Pfeiffer,[49] a pupil of Chiari, described a similar case, and, without knowledge of Sänger's previous work, likewise proposed to call it a de-

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ciduoma malignum. He stated at the same time that Chiari[6] considered that three cases, which he had previously reported as carcinoma of the uterus following the puerperium, were of the same character.

Numerous more or less similar cases have been reported since Sänger[50] first called attention to this class of tumors, which have increased very rapidly in number since the appearance of his monograph. The majority of the cases have been reported by German observers and a few by French, but as yet no one in this country or England has reported a well-authenticated case.

The case which we are about to report occurred in Baltimore last summer. My friend, Dr. Wm. T. Howard, Jr., Professor of Pathology in the Western Reserve University of Cleveland, performed the autopsy and very kindly placed the specimens at my disposal. The specimens were exhibited before the Johns Hopkins Hospital Medical Society last November, and a brief report of the case appeared in the Johns Hopkins Hospital *Bulletin* of December, 1894.

For the clinical history of the case we are indebted to Dr. Wm. E. Harris, of Baltimore, who attended the patient in her last confinement and for some time subsequently.

Clinical History. R. W., aged thirty-five years, was a full-blooded negress, both her parents having been born in Africa. Her family history was good, both parents being still alive. She had been treated by Dr. Harris for malaria some two years previously, and for bronchitis about six months before her last pregnancy. She has had five pregnancies, the third ending in a miscarriage at the sixth month, and the others at full term; in all of which, with the exception of the last, she was attended by a midwife.

During her last pregnancy she felt somewhat apprehensive as to the result and engaged Dr. Harris to attend her. The pregnancy was perfectly normal, excepting a transient attack of slight albuminuria a few days before confinement.

April 15, 1894, she was delivered spontaneously of a dead

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child. The labor was slow and lasted about thirty hours, a good deal of blood being lost during the third stage. The placenta was "soft and boggy," but there was no loss of blood after its expulsion. The puerperium was not entirely normal, the temperature remaining at about 100° F., and she felt very much prostrated. Dr. Harris saw her for eight days, when he discontinued his visits, leaving her with a chalybeate tonic.

About one week later, the patient's mother informed him that there was a small and painful nodule, about the size of a pea, on the right labium majus, for which he prescribed some soothing wash without seeing the patient. Three weeks after the labor, he was called once more to the case and found the right labium swollen to about the size of a hen's egg and very painful. In it was a bright-red tumor the size of a walnut, which rapidly increased in size and soon became gangrenous and ulcerated on its surface, so that a month after labor it had attained the size of a hen's egg, was markedly necrotic on its surface, and was accompanied by a very odorous discharge. There were no symptoms indicating any involvement of the uterus, and as the patient was rapidly growing worse he advised her to enter the Maryland German Hospital, which she did on May 16th, and died there July 12, 1894.

When admitted to the hospital, she was suffering with septicæmia; and examination showed a large sloughing mass, which occupied nearly the whole of the right labium and the adjacent tissue, in the centre of which there was a large fistulous opening into the rectum, through which fæces were discharged. The temperature varied from 99° F. in the morning to 103° F. in the afternoon, but during the last three weeks of life it did not rise above 100° F. Death was from exhaustion, with marked emaciation. The clinical diagnosis was "sloughing hæmatoma of the vulva with septicæmia."

*Abstract of autopsy protocol.* There are a few scattered flakes of grayish-white lymph on the intestinal peritoneum, the peritoneum is pale and the peritoneal cavity contains about 50 c.cm. of clear fluid. The genital tract and rectum were removed *en masse*.

At the entrance of the vagina, involving its posterior and

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lateral aspects and both labia majora, there is an irregularly-shaped raised mass of a dark grayish-red mottled appearance, which is marked by deep furrows of ulceration. This is about 10 c.cm. in circumference and extends for about 6 c.cm. up the posterior vaginal wall. At the upper border of this mass, on the posterior wall of the vagina, there is an irregularly-shaped opening 2 c.cm. in diameter, which communicates with the rectum. Its edges are not raised. On section the mass is of a mottled-gray and red color, is soft and friable, and is separated from the underlying tissue by a paler grayish zone.

On the left lateral wall of the vagina, 4 cm. below the cervix, there is an oval area raised 5 mm. above the surrounding tissues, which measures 1.5 by 1 cm., is of a grayish-red color, and presents a granular appearance. It is soft and readily breaks down under the fingers. On section, it is also of a grayish-red color and extends through the vagina into the underlying tissues.

The cervix is soft, considerably dilated, and has very thin walls. On the right side of its vaginal surface there is a small ulcer; its canal is free from ulceration and new growth.

The body of the uterus is about twice the normal size and its cavity is considerably dilated. On section, its wall is very pale and softer than usual. The mucosa is pale and free from ulcerations. From the posterior wall of the body of the uterus an irregular oval mass, 3.5 cm. long and 2 cm. wide, projects 1.5 cm. into the cavity of the uterus. Its surface is uneven and grayish-white in color, marked here and there by greenish-gray areas. At its lower portion, just above the os internum, there is an irregularly-shaped superficial loss of substance, which is covered by a loosely adherent, foul-smelling slough. On section, the tumor presents a grayish-red granular appearance. In the fundus, beneath the mucosa, there is a smaller tumor the size of an almond, which on section presents the same appearance as the larger tumor.

The left tube is of the usual size, its fimbriated extremity is free, and a thin milky fluid can be expressed from it. The left ovary is smaller than normal, and from its hilum a dark-red tumor, the size of a hazlenut, arises, which is soft, and breaks down readily under the finger, and on section closely resembles

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placental tissue. Adjacent to this, and corresponding to the parovarium, is a small multilocular cyst, the size of a lemon, which contains clear fluid.

The right tube presents the same appearance as the left. The left ovary is irregularly nodular in shape, and on section contains several small cysts with hemorrhagic margins and clear contents.

*Lungs:* Left lung. There are numerous thin adhesions, particularly on the upper and anterior surface of the superior lobe. On its surface, as well as on section, the lung is seen to be occupied by a large number of irregularly-shaped round or oval nodules, which vary from a pea to a walnut in size; the majority being situated in the peripheral portions of the lung. They are grayish-red in color, some presenting soft grayish areas in their centre. They easily break down under the finger, and are readily enucleated from the surrounding lung substance, and closely resemble placental tissue in appearance. At one point, upon enucleating a nodule, a vessel of considerable size is seen, whose walls are infiltrated by the growth, which appears to project into its lumen.

The right lung is likewise studded by large numbers of similar nodules. In both lungs the tissue between the nodules presents its usual appearance and crepitates. The bronchial mucous membrane is normal, as are also the bronchial glands.

*Heart:* The heart is normal, but several atheromatous patches are seen in the upper part of the aorta.

*Liver:* The liver is not enlarged. It presents markedly fatty degeneration, and scattered through it are numerous hemorrhagic nodules, the largest not exceeding a hazlenut in size.

*Spleen:* The spleen is twice its normal size, is soft and almost diffluent, the entire organ being the seat of an infarction. It also contains several small metastases.

*Kidneys:* The kidneys are not enlarged, but present marked fatty degeneration. In the cortex of both, just at the base of the pyramids, are several dark-red hemorrhagic areas, with whitish or grayish centres, which vary from 2 to 10 mm. in diameter.

The renal pelves, ureters, bladder, suprarenals, and pancreas are normal. The mucous membrane of the stomach and intestines is very pale, but otherwise normal. Agar cultures from the lungs, spleen, liver, and kidneys were sterile.

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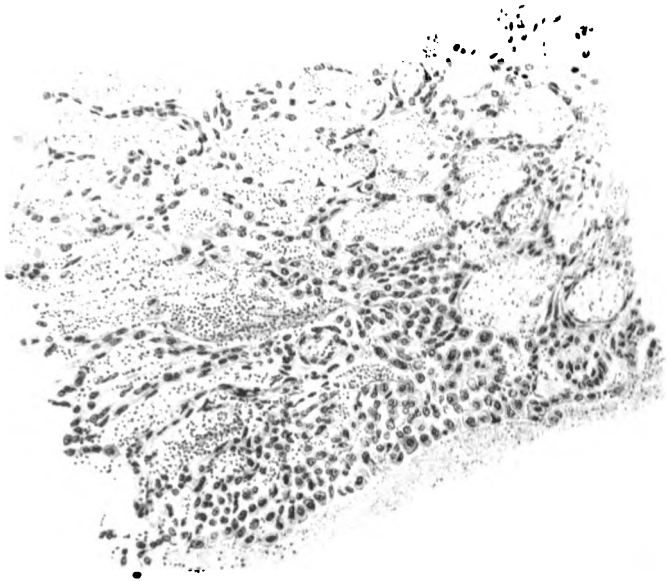
FIG. 1.



Section from primary uterine tumor, showing its alveolar structure, with the cavities filled with blood. × 60 diam. Leitz, ocular 3. Objective 3.

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*Microscopic examination.* Small pieces from the various organs were immediately placed in 95 per cent. alcohol, from which very satisfactory sections were obtained.

Sections were first made through the larger nodule on the posterior wall of the uterus and the adjacent portions of the uterine wall. The mucosa covering the uterine wall adjacent to the tumor was very slightly changed. Its surface epithelium was intact, and in places ciliated, and its glandular structures presented their usual appearance. The interglandular connective tissue was increased in amount, and scattered through it were considerable numbers of round cells and leucocytes. The mucous membrane could be traced for a considerable distance up along the sides of the tumor, where it gradually disappeared, the surface epithelium disappearing first, while the stroma and glands persisted longer. Nowhere in the mucosa could any trace of decidual tissue be found, nor did it present any suggestion of sarcomatous change.

It was found that the new growth had invaded portions of the muscularis, which were still covered by but slightly changed mucosa, and had consequently undermined it to some extent, but by far the greater part of the growth was uncovered by mucosa.

The entire superficial portion of the nodule is composed of necrotic material, which indeed makes up its greater part. The most superficial portions are entirely necrotic, and we are able to distinguish only threads of fibrin and very dense leucocytic infiltration. Lower down, as we approach the real substance of the tumor, the necrosis becomes less absolute, and in the necrotic masses we are able to distinguish the outlines of cells, whose nuclei have disappeared. As we approach still nearer, we find very large individual cells scattered through the threads of fibrin, in whose meshes are large quantities of blood-cells, which are accompanied by many more leucocytes than normal. These cells are very large, and present a decidedly epithelial appearance, though they are somewhat suggestive of the large epitheloid decidual cells. The boundary line between the necrotic tissue and the new growth is very irregular, as is also the line of demarcation between the latter and the subjacent muscular tissue.

Under the low power, the most striking feature of the growth



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is its marked alveolar structure, its greater part being made up of irregularly-shaped cavities of varied size and shape, which are filled with blood and fibrin, and contain numerous leucocytes. (Fig. 1.) Nowhere in these cavities are we able to discover any trace of an endothelial lining. They are separated from one another by irregularly-shaped bars of tissue, which are made up of large epithelioid cells of varying shape and size, which likewise form the boundaries of the blood spaces. Where the cells are closely packed together they are usually more or less spindle-shaped, with a nucleus filling the greater part of the cell, and staining moderately deeply, while the cell body stains readily with eosine, and presents a distinctly granular appearance, and contains vacuoles of varying size. Where they are less closely packed together, and especially where the individual cells are separated from one another by hemorrhage, they assume a polygonal or rounded shape, and closely resemble epithelial cells. (Fig. 2). In other places, especially where the bars of tissue separating the alveolar spaces are very thin, the cells may present irregular branching outlines, and send out long branching processes, which apparently anastomose with similar projections from other cells.

In some instances, only a single layer of cells separates one blood-space from another, and at times they appear to be separated only by the anastomosing branching processes, and not even by the whole thickness of a cell body. Some of these cells resemble stellate connective-tissue cells in shape, but differ from them by their much larger size.

The nuclei are usually round or oval, and vary considerably in size, but are sometimes very irregular in shape, corresponding to the general outlines of the cells which they occupy. They stain quite deeply with the usual stains, and present a well-marked chromatin network. In most of them we observe a single nucleolus, and not infrequently two, which are large and very prominent. A considerable difference in staining, however, appears in nuclei belonging to cells of apparently the same character, some staining much more deeply than others. Considerable numbers of the cells contain two or more nuclei, giving rise to pictures similar to those obtained in normal decidual tissue. It is rare,

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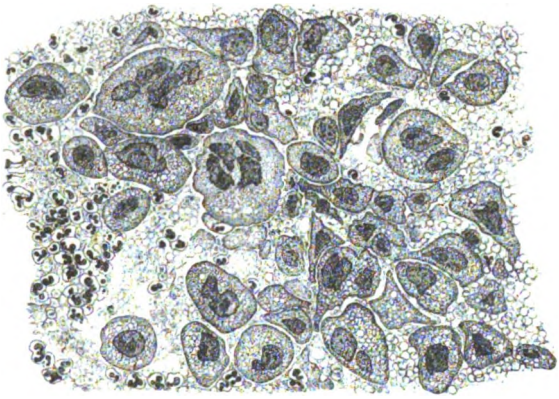
FIG. 2.



Portion from lower margin of Fig. 1, more highly magnified, showing the structure of the cells and the absolute lack of intercellular tissue, the cells being separated by blood cells and leucocytes. × 275 diam. Zeiss, ocular 4. Objective DD.

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however, in this part of the tumor, to find cells containing more than six or eight nuclei. In some of them we observe typical and in others atypical mytotic figures.

Throughout this portion of the growth we are unable to find any trace of intercellular tissue or reticulum, most of the cells lying in apposition, and when they are separated from one another it is only by blood or threads of fibrin; thus giving the tissue a decidedly epithelial appearance. Nowhere in the cell bars are we able to find any trace of blood or lymph vessels, consequently necrotic areas are of frequent occurrence.

The boundary line between the new growth and the muscularis is very irregular, as it is being invaded in all directions by offshoots from the tumor. In places we may see bands of cells making their way between the muscle cells, and frequently causing their degeneration and atrophy; and in other places we see masses of the characteristic tumor cells making their way along the lumen of what appear to be venous channels. And here and there we find small areas of tumor formation in the muscularis, at some distance from and without any apparent connection with the main growth. A marked zone of leucocytic infiltration always precedes and surrounds the new growth as it invades the muscularis.

At one side of the tumor there is an area, which at first sight presents an absolutely different appearance. (Fig. 3.) Here we find a mass composed of long, wavy, more or less parallel bands of cells, connected at one end with the main body of the tumor, but with its free end projecting into a cavity, which is partially lined by endothelium, and is apparently of venous origin. On closer examination, we find that we do not have to deal with individual cells at all, but with long, narrow, worm-like bands of protoplasm with nuclei imbedded in them, but presenting absolutely no trace of division into cells. For the most part, these bands contain only a single row of nuclei, but in other places they are arranged in groups, giving rise to structures similar to giant cells. Their protoplasm is quite granular and stains readily with eosine, and contains many vacuoles. The nuclei vary greatly in shape, but are mostly round or oval. They contain a thick chromatin network and stain deeply, and usually present one or two sharply marked nucleoli. (Fig. 3.)

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The muscular tissue adjoining this area presents a large amount of leucocytic infiltration. And many of the muscle nuclei are enlarged and swollen, and contrast markedly with the normal muscle cells, which are at some little distance from them, and between which all stages of gradation may be observed. At first, it appeared as if the above-mentioned protoplasmic bands were derived from them, but closer examination shows that this is not the case; for the larger the muscle nuclei become, the more faintly do they stain, and the less resemblance do they bear to the nuclei in the protoplasmic masses or syncytium. And it is evident that we only have to do with degenerating muscle cells and not with those which are being transformed into tumor elements.

Not far distant from this area containing well-marked syncytium, we find other areas presenting a similar but not so well-marked structure. And at one point we find an areolated area, which at first glance resembles a mass of large fat cells. (Fig. 4.) But, on closer examination, we find that we have before us a considerable number of quite large, round, or irregularly-shaped cavities, which lie in a mass of protoplasm, which shows no trace of division into individual cells, and which corresponds to the syncytium above described. The partitions separating the cavities, which appear to be empty or filled by transparent contents, are generally quite thin, usually being but a small fraction of the diameter of the cavities in thickness. Many of the nuclei lie in the partition walls, and are then usually spindle-shaped, while those in the other portion of the mass are more oval in shape. Both the protoplasm and its enclosed nuclei correspond exactly in structure and staining qualities to those found in the protoplasmic bands (Fig. 3); and there can be no doubt as to their identity, their only difference consisting in the presence of the alveolar spaces.

After carefully examining these areas, and then going back to the main portion of the tumor, we find that many portions, which at first appeared to be made up of individual cells, are really small masses of syncytium, and some of the blood-spaces likewise appear to be bounded by it. In fact, the likeness becomes so striking in many places that we cannot help asking if it is not possible that even the cells which still appear as individuals

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FIG. 3.

**Uterine wall at margin of growth, showing syncytial masses invading a venous channel.** × 256 diam. Leitz, ocular 1. Objective 7.

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may not have a similar origin, and perhaps be due to transverse or oblique sections through syncytial bands. Sections through narrow worm-like bands, giving rise to the smaller mononuclear cells, and those through thicker masses appearing as multinuclear or even giant cells; analogous to the appearances obtained on section through the placenta in its early stages, where we find mononuclear as well as giant cells scattered through the intervillous spaces, which are undoubtedly produced by sections through chorionic syncytium.

Sections through the entire thickness of the fundus, including the smaller nodule, show that it presents essentially the same structure as the larger nodule, except that it is much more necrotic. This nodule is almost entirely covered by uterine mucous membrane, which is of the same character as that which partially covers the larger nodule. In several places, deep down in the tissue, we found several cut-off portions of uterine glands, whose epithelium is desquamated and lies loose in their lumina. At first sight they appeared to be isolated areas of tumor formation, but a casual examination reveals their true nature and their marked difference from the cells of the new growth.

The chief point of interest in these sections is that we find in the uterine wall, at least 1 cm. distant from the tumor mass, several apparently normal veins, which contain thrombi composed of typical tumor cells, which are imbedded in a mass of fibrin and lie loose in the lumina of the vessels, and are apparently in transit to some remote portion of the body, probably the lungs, where they might have given rise to other metastases.

We next cut sections through the necrotic tumor mass at the entrance of the vagina. At its margin, it is covered by the typical stratified epithelium of the epidermis, with the characteristic pigmentation in its deeper layers (the woman being a negress). Beneath this is the subcutaneous connective tissue, with bundles of striated muscles crossing it in all directions.

The greater part of the tumor formation is composed of well-preserved blood, which is not contained in vessels, and in which there are many more leucocytes than usual. The cellular part of the metastasis is only clearly marked at the margins of the growth when it is seen to present the same general structure as the nodules in the uterus.

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Here we observe the same alveolar structure, only more highly developed, the greater part of the metastasis being composed of free blood and blood in spaces, and the same two varieties of cells(?). Here the protoplasmic bands or masses of syncytium appear in much greater abundance, and are more clearly marked than in the primary tumor, and assume all sorts of bizarre forms. In some places we find structures almost resembling cross-sections of chorionic villi; that is, more or less circular bodies surrounded by a protoplasmic band, which contains nuclei arranged in a single row, but presenting absolutely no trace of division into cells, in whose centre there are a number of polygonal epitheliod cells, whose nuclei, as a rule, stain less deeply. In none of these structures, however, do we find any trace of bloodvessels or real stroma, nor any trace of a second layer of definite epithelial cells (Langhan's Zellschicht), beneath the syncytium. In other words, we are unable to find more than a superficial resemblance to chorionic villi.

In other places, the definitely characteristic syncytium appears to form a distinct border, beneath which there are several layers of what appear to be definitely marked epithelial cells(?). And in other places it forms large finger-like masses with nuclei scattered all through them, which lie free in the blood and do not appear to be in connection with any other form of cells. (Fig. 5.)

We also observed most beautiful giant cells, with large numbers of irregularly placed nuclei, which are clearly produced by sections through syncytial masses. Some of the alveolar spaces are apparently completely bounded by syncytium of varying thickness, which in places sends out long branching process, just as in the primary uterine tumor.

The protoplasm composing this syncytium is finely granular and takes on a yellowish-red stain with eosin. Scattered through it are numerous vacuoles, which vary in size from cavities scarcely visible, under a high power, to very large cavities, some being empty and others containing blood, but none of them presenting any trace of an endothelial lining. Some of them appear to be produced by the degeneration and final disappearance or dropping out of nuclei; while others have certainly no connection

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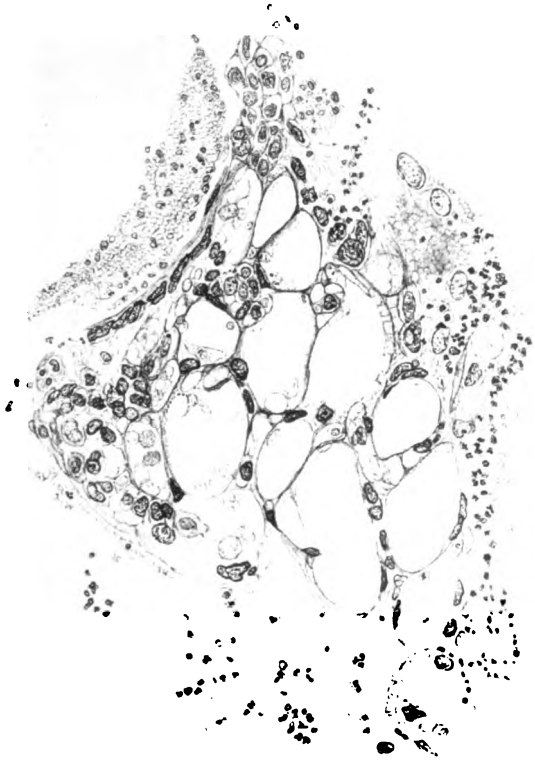
FIG. 4.



Area near Fig. 3, showing areolated arrangement of syncytium. × 150 diam.

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with nuclear changes, as the majority of them are far smaller than the smallest nuclei observed in the growth.

The nuclei are of various shapes and sizes, and occasionally assume very bizarre forms. They all contain a definite chromatin network, but vary greatly in their staining properties, some staining intensely and others quite lightly. This is strikingly observed in some of the finger-like bands of syncytium, which lie perfectly free in the blood, and in which there is absolutely no trace of cell division, when one nucleus may stain very intensely and possibly the one adjoining it very lightly. So that if they occurred in separate cells, there would be no hesitation in saying that they were totally different, and, perhaps, of different origin. On the whole, however, they stain very intensely. In most of them one or more nucleoli can be observed.

The individual cells, to which we have already referred as being bounded by or enclosed within masses of syncytium, present a distinctly epithelial appearance. There is absolutely no trace of reticulum between them, and they are frequently packed very closely together. The greater part of these cells are occupied by large nuclei, which, as a rule, stain less intensely than those in the syncytium, but correspond entirely with the syncytial nuclei, which stain lightly. The small amount of protoplasm, which surrounds the nuclei, is slightly granular and stains exactly as does that of the syncytium, and likewise contains numbers of small vacuoles.

The boundary line between the metastasis and the surrounding tissue is marked by a layer of leucocytic infiltration, and tumor cells may be seen invading it in all directions. At several points it is clearly seen that the tumor cells have broken through vessel walls, and in some instances have partially or entirely replaced their endothelial lining.

Small thrombi, composed apparently of individual cells or giant cells, may occasionally be detected in the small veins of the subcutaneous tissue, at a very considerable distance from the metastasis itself.

Sections through the metastases in the various organs present identically the same structure as that at the entrance of the vulva, varying from it only in the fact that they are surrounded

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by different tissue; and it is therefore unnecessary for us to consider them in detail. They all present the same markedly hemorrhagic character, and the cellular elements are only well preserved at their margins. The pulmonary metastases are much more necrotic than those in the other organs, but otherwise do not differ from them. In all the organs the metastases are surrounded by marked areas of leucocytic infiltration. In the kidney there is marked increase in the cells about the glomeruli, combined with marked degeneration of the epithelium of the convoluted tubules, which is presumably fatty. In the spleen there are various infarcted areas, and in the lungs many of the alveoli are filled with leucocytes, desquamated epithelium, and fibrin.

It is thus seen that we have to deal with a very remarkable new growth, which cannot readily be classed among any of the well-known tumors occurring in the uterus.

The greater part of the original tumor, as well as the metastases, is made up of blood, which lies either free in the tissues or enclosed within cavities formed by the tumor cells; while its cellular part is composed of large elements, some of which appear as epithelial cells(?) and others as larger or smaller masses of syncytium.

Nowhere in the tumor can any trace of bloodvessels or reticulum be discovered, and it appears to be composed solely of epithelial cells(?) and masses of syncytium, which are grouped together with apparently no attempt at tissue formation; but which lie free in areas of hemorrhage without apparent integral connection with the surrounding tissues.

The metastases present the same characteristics, and appear to be thrombotic or embolic masses of cells, which multiply in the vessels and cause their rupture, with consequent hemorrhage into the surrounding tissue. In these hemorrhagic areas, the cells live on and multiply until they form masses too large to be nourished simply by osmosis, when they undergo necrotic changes. Accordingly, the onkological interpretation of the tumor is no easy matter, not to speak of the difficulties involved in positively settling its histogenesis.

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FIG. 5.

Single syncytial mass from vulval metastasis, which lay apparently free, and was entirely surrounded by blood. × 275 diam. Zeiss, ocular 4. Objective DD.

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ONKOLOGICAL RELATIONS AND HISTOGENESIS. It is evident from the microscopical examination that our tumor, while closely resembling Sänger's in its gross appearance and clinical history, differs very essentially from it in its finer structure. Both present the same alveolar structure and are characterized by their markedly hemorrhagic nature; but Sänger's new growth is apparently composed of decidual cells, while ours is made up of cellular elements whose significance is not beyond all question.

It is our object, in this article, to consider carefully the nature and histogenesis of our tumor, and then to compare it with the various new growths, which have been described as malignant deciduomata or by more or less cognate terms.

It is apparent, from an anatomical standpoint, that the most striking feature of our tumor is the presence of the protoplasmic masses or syncytium. And anyone, who is at all conversant with the structure of the normal placenta in its early stages, must be impressed with the marked similarity existing between the syncytial masses in our tumor, and the so-called chorionic epithelium. In both we have the same protoplasmic masses, without division into definite cells, and the same deeply staining nuclei, and in both the occurrence of vacuoles of varying size, which are either absolutely empty or filled by transparent contents; and we do not consider that we shall go far wrong in concluding without further argument that this portion of our tumor is either derived from or very closely connected with what is generally termed chorionic epithelium.

We do not stand alone in making this assertion, for other observers, especially H. Meyer,[39] Klebs,[24] Gottschalk,[12] L. Fraenkel,[8] and Marchand,[36] have observed the same, and have not hesitated to conclude that they had to deal with growths which were derived either wholly or in part from chorionic epithelium.

The nature of the individual cells, which also constitute a considerable portion of our tumor, is, however, not so clear,

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and before attempting to establish their identity we think it would be well to consider briefly the more intimate structure of the chorionic villi, and some of the more recent works concerning their development.

Langhans,[31] in 1882, was the first, we believe, to call attention to the fact that the chorionic villi are covered by a double layer of epithelium, and all subsequent observers have confirmed his statements; the only exception, so far as we are aware, being Hofmeier,[17] who still believes in the existence of only a single layer.

The outer layer, that is, the layer nearest the uterine wall, is composed of a band of protoplasm, in which very deeply staining nuclei of varying shape are deposited without any trace of division into individual cells. The nuclei are arranged for the most part in a single row, and to this tissue the term syncytium has been very aptly applied. Beneath it comes a single layer of definitely marked epithelial cells, which are generally cuboidal or cylindrical in shape and possess nuclei, which stain considerably less intensely than those of the syncytium. This layer is readily seen to be composed of individual cells, and is generally designated as Langhans's cell layer (Zellschicht), and beneath it comes the connective-tissue stroma of the villi, with its blood and lymph vessels.

Thus far all observers are agreed, with the exception, as stated above, of Hofmeier;[17] and anyone who is able to examine young embryos can readily convince himself of the correctness of their observations.

But here the unanimity ceases, for as soon as we begin to consider the origin and development of two layers of chorionic epithelium, we are met by several absolutely conflicting opinions. Thus, Langhans[31] formerly believed that the syncytium represented the fœtal ectoderm, and that the cell layer beneath it was of mesoplastic origin; but later, and especially in the works of his various students, he changed his opinion, and now considers that the cell layer represents the fœtal ectoderm while the syncytium is most probably of maternal origin.

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Kastschenko[23] believes that the syncytium represents the fœtal ectoderm, and that the cell layer is developed from it secondarily. Minot[40] and Gottschalk[10] likewise believe in the fœtal origin of both layers; while Turner[59] and Ercolani[7] consider that the syncytium is of maternal origin, the former supposing it to be derived by the transformation of decidua cells, and the latter from maternal endothelium.

Most recent observers, however, believe that Langhans' cell layer represents the fœtal ectoderm, while the syncytium is derived from metamorphosed uterine epithelium.

This mode of development is particularly advocated by Kossman[28] and Merttens[38] for the human placenta, and their arguments are rendered far more convincing by the study of placental development in other animals; for Selenka[56] has apparently conclusively demonstrated it in the monkey, and Strahl[57] in the dog and cat; while Frommel[9] has rendered it fairly probable in the bat.

Merttens[38] in his "Contributions to the Normal and Pathological Anatomy of the Human Placenta" almost conclusively demonstrates this mode of origin. The article is based in great part upon a human embryo, seven to eight days old, which was accidently obtained by curetting the uterus. It was still in connection with portions of the decidua vera and serotina, and he clearly and definitely demonstrated that the surface epithelium of the decidua, as well as portions of its glandular epithelium, was transformed into syncytium. As a portion of the syncytium is derived from the glandular epithelium, a certain amount of it must necessarily be found deep down in the decidua between the true decidual cells; and he likewise demonstrated that offshoots from the surface epithelium also make their way down between the decidual cells. The entire article is of great interest, and we heartily recommend its perusal to those interested in the subject.

Kossman[28] demonstrated similar changes in the epithelium of a tube, which was the seat of a four to five weeks pregnancy; and Gunsser,[13] in a similar case, could demonstrate

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the transformation of tubal epithelium into a syncytium, which grew over the chorionic villi, and so provided them with a second layer of epithelium; and in one of the cases of tubal pregnancy, which we have examined, we also found changes in the epithelium which are capable of similar interpretation.

After this imperfect survey of the subject, it is apparent that the weight of evidence is decidedly in favor of regarding the syncytial covering of the villi as derived from uterine or tubal epithelium, as the case may be, and consequently of maternal origin; while Langhans's cell layer represents the fœtal ectoderm.

At the same time, it must not be forgotten that several competent recent observers, especially Minot,[40] do not incline to this view and still regard both layers of chorionic epithelium as fœtal in origin. For our own part, while we cannot express an opinion based upon positive experience, we incline strongly to the maternal origin of the syncytium.

This being the case, we have but little hesitation in regarding the distinctly syncytial portions of our tumor as maternal in origin, as we have already identified it with the so-called chorionic epithelium or syncytium.

The identification and histogenesis of the apparently individual cells, which make up a considerable portion of our tumor, unfortunately is a much more difficult matter, and we must confess in advance our inability to arrive at more than a probable conclusion concerning them. For it is well known how very difficult it is to settle questions of histogenesis in a perfectly satisfactory manner, especially when we are obliged to base our conclusions upon the general appearance of individual cells, which apparently do not stand in direct connection with the tissues from which they are derived.

As stated above, these cells in general present a decidedly epithelial appearance. Marchand,[36] in his very suggestive article upon this subject, states that we must consider the possibility of their being derived from anyone of four sources,

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namely: 1. The decidual cells *per se;* 2. The syncytial covering of the villi; 3. The fœtal ectoderm (Langhans' cell layer); and 4. The mesoblastic stroma of the villi. In other words, they may possibly be either maternal or fœtal in origin.

In the preliminary communication upon our case, we stated that the growth was composed in great part, at least, of decidual cells, and that it corresponded very closely to Sänger's original case.

There is no doubt that the cells do resemble decidual cells very closely; for we meet with the various modifications in shape and size and arrangement of the nuclei, with which we are familiar as occurring in the normal decidua. But careful examination teaches us that the resemblance ceases here, and that they lack several of the characteristics of cells derived from connective tissue. In the first place, we were absolutely unable to find any trace of ground substance or reticulum separating the cells from one another, and instead find them lying in direct apposition, or, when that is not the case, separated only by blood or threads of fibrin, and thereby conforming to epithelial cells in arrangement; and, again, the growth is completely lacking in blood or lymph vessels of any description, its hemorrhagic character being due in great part to free hemorrhage into the surrounding tissues, and when the tumor proper contains blood it is within cavities, whose walls are formed entirely by tumor cells, upon which absolutely no trace of endothelium can be discovered. In view of these considerations, we believe that we are amply justified in concluding that our tumor is not made up of decidual cells.

There likewise appears to be absolutely no ground for believing that they are derived from the stroma cells of the chorionic villi, partly for the reasons already adduced against their decidual origin, but principally because no one, except Gottschalk,[12] as supposed that they can ever take on such decidedly epithelial forms, as are presented by the cells in our tumor.

Marchand,[36] in the histological description of Ahlfelds's case of "Deciduoma" following a tubal pregnancy, has appar-

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ently met with the same two varieties of cells as in our case, namely, the syncytium and individual epithelial cells. He concludes, just as we have done, that the former is derived from chorionic syncytium and is of maternal origin, and believes that the latter, in all probability, are derived from Langhans's cell layer of the villi, and are therefore of fœtal origin. He states that he has convinced himself as to the morphological identity of the two forms of cells by comparison with various specimens of Langhans's cell layer, especially those derived from hydatidiform moles.

He states that the cells of Langhans's cell layer are usually small polyhedral cells with a tolerably homogeneous nucleus, but that they may undergo a very considerable increase in size at the ends of villi of attachment (Haftzotten) and in the cell masses between the villi.

"The behavior of the nuclei is particularly characteristic, which are provided with a tolerably wide-meshed chromatin network and one or several large round or lancet-shaped nucleoli. Several nuclei may be also found in the same cell; the elements of the cell layer divide by indirect cell division."

Then, speaking of his tumor, he says:

"This relation of the two varieties of tissue is especially characteristic, and recalls to a marked degree that of the cell masses between the villi and in the neighborhood of the attachment of the villi to the surface of the decidua. Accordingly there appears to me to be no doubt that the tumor mass is composed of the same two elements, which form the normal chorionic epithelium, namely, the syncytium and the ectodermal cells.

"The peculiar symbiosis, which normally characterizes these elements, likewise explains their combination in the tumor formation. This peculiarity extends to the entire arrangement of the two forms of tissue, and to the formation of blood spaces within the syncytium and the lack of other vessels."

From the statements which we have just adduced, it does

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not appear to us that Marchand[36] has proven, as conclusively as he believes, that the cells in question are derived from the fœtal ectoderm; his entire argument being based upon the resemblance of the two forms of cells to one another.

But, at the same time, it must be confessed that he has suggested a possibility, which, at least for his case, deserves careful consideration.

We do not, however, believe that this mode of origin applies to the cells in our case; for, as we have already stated, the differences between their nuclei and protoplasm and those of the syncytium is not so marked as in his case.

As we stated in the microscopic description of our case, it was difficult not to suppose that a part at least of the individual cells were due to cross or oblique sections through syncytial masses or bands.

We pointed out that the nuclei of the individual cells, as a rule, stained less deeply and presented a less marked chromatin network than the nuclei of the syncytial masses; but, at the same time, they varied greatly among themselves, some of them staining quite as intensely as the syncytial nuclei.

And we also called attention to the fact that all the syncytial nuclei did not stain equally intensely, nor contain an equally well-marked chromatin network, and that they frequently presented variations between themselves quite as great as those observed between the individual epithelial(?) cells.

Such being the case, it does not appear necessary to consider the two classes of cells as essentially different in origin, especially when we recall the fact that the protoplasm of both varieties of cells, as a rule, presents the same general appearance and staining qualities.

When we recall the fact that many of the cells differ very greatly in size, some being two or three times as large as others, and that the nuclei likewise vary considerably in the amount of cell space which they occupy, it appears to us that these differences may be most readily explained by supposing that what appear as individual cells are really only sections

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through syncytial masses or bands. Sections through narrow bands giving rise to small cells, whose nuclei are surrounded by only a small amount of protoplasm, for the nuclei occupy nearly the entire width of many of the narrower bands; while sections through wider bands would give rise to larger cells with more protoplasm, and sections through still larger syncytial masses would give rise to large multinuclear cells and giant cells. The individual cells would then be analogous to the giant cells and cell masses observed in the normal placenta.

This mode of origin certainly applies to considerable numbers of these cells, and we are inclined to believe to all of them; but at the same time it is impossible to exclude the possibility of some of them being derived from the fœtal ectoderm or even from the decidua cells.

The syncytial origin of the tumor readily explains its markedly hemorrhagic character, and its superficial resemblance to placental tissue; for all the intervillous spaces of the normal placenta are lined by syncytium, which is in direct contact with the blood, except for a very short period at the beginning of pregnancy, when they are supposed by most observers to be lined by a thin layer of maternal endothelium, which, however, soon disappears.

Kossmann,[28] on the other hand, believes that the intervillous spaces are at no time lined by maternal endothelium, but are produced simply by the dilatation and coalescence of the vacuoles, which are so characteristic of the syncytium.

According to this conception of its structure and histogenesis, we have to deal with an epithelial tumor of maternal origin. And, although it differs very considerably from the usual forms of carcinoma, in that it does not tend to the reproduction of any definite form of tissue and is totally lacking in stroma, we believe that it is most fittingly designated as a carcinoma, which has arisen from transformed uterine or chorionic epithelium or syncytium.

On comparing our specimen with those described in the

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literature, we find that it presents a very marked resemblance to the cases described by H. Meyer,[39] Gottschalk,[12] L. Fraenkel[8] and Ahlfeld,[1] and Marchand.[36]

In 1888 Meyer[39] described under the title "A Case of Destructive Proliferation of Retained Myxomatous Chorionic Villi" a tumor which resembles ours in many respects.

It occurred in a woman, aged fifty-five years, who had three children and died from anæmia, resulting from frequent and profuse uterine hemorrhages nine months after the manual removal of an hydatidiform mole. Only an incomplete autopsy was permitted, so that it is impossible to say whether metastases had been formed. The uterus was considerably enlarged, and its interior presented an irregular, nodular, eaten-out appearance, and scattered through its walls were numerous round nodules of a felty appearance, which varied from a grain of sand to a lentil in size.

On section, they were found to be composed of cylindrical structures, some of which contained a slight core of connective tissuse but without any trace of bloodvessels, but their most prominent feature was that they were covered by a thick layer of syncytium, which in many instances made up the entire structure. All of them lay within blood or lymph vessels, and he considered that they were derived from myxomatous villi, which had remained in the uterus after the removal of the mole and undergone proliferation. He classed it among the carcinomata and proposed to designate it as "epithelioma papillare corporis uteri."

Klebs,[24] in his work on *General Pathology*, refers to the same case, and states that it is undoubtedly derived from chorionic epithelium, but should not be classed among the carcinomata, but proposes to call it a placental papilloma. He regards it undoubtedly of fœtal origin, and considers it a most beautiful example of parasitism. When in Baltimore a short time ago, Prof. Klebs kindly examined our case and said that it corresponded with his case, and had no hesitation in regarding it as a parasitic growth of fœtal origin.



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It is only necessary to compare Meyer's[39] illustration with our own to see a marked resemblance, though his case differs from ours in its distinctly villous form, and in the fact that some of the villi contain a definite connective-tissue stroma, and possibly, also, in the absence of metastases; but owing to the partial autopsy it is impossible to be positive in this regard.

Gottschalk,[11,12] in two communications, has likewise described a tumor, which presents many points of resemblance to ours, and which we are inclined to regard as practically identical with it.

It occurred in a woman, aged forty-two years, in whom very profuse and continual hemorrhage followed an abortion in the third month. The hemorrhages persisted, and her uterus was dilated several times, and a large amount of what appeared to be placental tissue was removed.

Gottschalk then saw the case and removed with his finger from the uterus about 150 cm. of red tumor masses. He could have removed much more, but the growth had so far penetrated the uterine wall that he feared lest he should perforate it. The portions removed consisted of villi, which expanded at their ends into roundish masses, some of which were as large as a hazelnut.

The microscopic examination showed that he had to deal with "sarcoma of the chorionic villi(?)."

He removed the uterus per vaginam, the woman continuing well for six months after it, but died two months later with placental-like metastases in the lungs, spleen, and right kidney.

The uterus was very considerably enlarged, and at its upper right-hand margin and involving the fundus and the adjoining anterior and posterior walls was a large, jagged, villous growth, of reddish color, which had almost perforated the uterine wall. It corresponded in structure to the masses previously removed, and on section was found to be composed of syncytial masses, between and within which he found large

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polygonal cells with oval nuclei, which closely resembled decidual cells, but which he regarded as sarcoma cells derived from the stroma of the villi. Nowhere in these masses did he find any trace of bloodvessels. The metastases were composed entirely of syncytial masses, and showed absolutely no trace of sarcomatous stroma cells.

In his first article he designated the growth as "sarcoma-chorion-deciduo-cellulare," and considered that the primary change had occurred in the chorionic villi, which in some way had infected the cells of the decidua and caused them to take on a sarcomatous growth. He also stated that he believed that Sänger's case, as well as the other cases which had been reported as deciduomata, had a similar origin. In his later and more elaborate article he discards the term sarcoma-chorion-deciduo-cellulare and proposes instead to designate his case as sarcoma chorii. He recognized the fact that its greater part was composed of syncytium, which he considered was derived from the chorionic epithelium, but believed that the changes in the stroma of the villi were of more importance; and, while admitting that he had to deal with a tumor of both epithelial and connective-tissue origin, preferred to call it a sarcoma of the chorionic villi.

We have carefully read Gottschalk's[11,12] articles, and can only agree with Marchand[36] in believing that he has failed to adduce positive proof in support of the sarcomatous nature of the cells in question, and especially of their origin from the stroma cells of the villi.

It is true that Waldeyer[63] examined his specimens, and at a subsequent meeting of the Berlin Medical Society fully indorsed Gottschalk's position; but to us his proof appears no more convincing than Gottschalk's. And when we recall the fact that he likewise expressed himself in favor of the sarcomatous nature of the changes which Landau and Abel described in the endometrium associated with carcinoma of the cervix, and which later work has demonstrated were simply cases of hyperplastic endometritis, we do not feel that we are

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bound to accept his verdict in this instance without question. Especially when we recall the fact that the pulmonary metastases in Gottschalk's case were composed entirely of syncytium, and showed absolutely no trace of the sarcomatous stroma cells. Now, had the case been a sarcoma or even a mixed sarcoma and carcinoma, we should expect to find in the metastases at least some traces of its sarcomatous nature; but finding none, and learning from his own description that the metastases were pure epithelial, *i. e.*, syncytial in character, we must confess that we are very skeptical as to its sarcomatous nature, and therefore consider his designation—sarcoma chorii—at least ill-chosen, if not absolutely erroneous.

We believe that the cells in question were most likely produced, as in our case, by cross or oblique sections through syncytial bands, or perhaps were derived from Langhans' cell layer of the villi, as believed by Marchand.[36]

As stated, when considering the development of the epithelial layers of the chorionic villi, Gottschalk[10] believes that they are both of fœtal origin, and consequently considers his tumor of fœtal origin, and therefore of a parasitic nature.

It is evident, however, from his description and the considerations just adduced, that his tumor is very similar to if not identical with our own.

L. Fraenkel[8] has recently reported a case as "carcinoma of the uterus, arising from the epithelium of chorionic villi, following an hydatidiform mole," which closely resembles our own. It occurred in Pernice's clinic in Greifswald, and its clinical history was reported by Perske,[44] in a Greifswald dissertation for 1894.

In July, 1892, a woman, aged twenty-five years, expelled an hydatidiform mole in the third month of pregnancy. In March, 1894, twenty-one months later, she returned to the clinic in very poor condition, having a markedly enlarged uterus with tumor masses on either side of it. She complained of a great deal of pain and passed blood by the bladder. The tumors on either side of the uterus were removed

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by laparotomy and were found to be small ovarian cystomata. The uterus was stitched to the abdominal incision and opened, when it was found filled by soft, reddish, placental-like masses. She suffered a great deal from cough and headache, and died three months later with metastases in the vagina, and a soft, red, spongy tumor arising from the abdominal incision.

Only a partial autopsy was permitted, but metastases were found in the spleen, bladder, parametria, and vagina. The uterine wall had been ulcerated through and its cavity communicated with the parametrial metastases, which in turn communicated with those found in the vagina. The clinical symptoms, likewise, indicated the formation of metastases in the lungs and brain.

Sections through the tumor masses, which were removed from the uterus at the time of operation, were very necrotic and presented a marked hemorrhagic character. When its structure could be made out, it was seen to be composed of very large, irregularly shaped individual cells, which were separated from one another by a definite reticulum, and he accordingly concluded that they represented decidual cells and that he had to deal with a deciduoma malignum. Upon examination of the tumor masses obtained at the autopsy, however, he was surprised to find that all trace of the individual cells had disappeared, and that he had to deal with an alveolar and hemorrhagic tumor, which was made up of large masses of syncytium, by which the majority of the blood cavities were bounded; while others were bounded by endothelium which had been partially replaced by syncytial masses.

He stated that there was nothing about the growth indicative of sarcoma, and, even though there was no tendency to the formation of villous-like structures, he had no hesitation in concluding that the syncytium corresponded to that of the chorion, and that he had to deal with a carcinoma produced by its proliferation.

As the tumor showed no trace of myxomatous changes, he is doubtful whether it is derived from myxomatous villi.

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He does not express himself as to the origin of the chorionic syncytium, but it is to be inferred that he regards it as fœtal.

The case of Ahlfeld[1] and Marchand,[86] to which we have already referred, occurred in a seventeen-year-old girl, whose menses had been regular up to Christmas, 1893, after which they became more profuse than usual, so that in April, 1894, she was obliged to consult a physician on account of profuse hemorrhages, which had lasted for three weeks. Upon rest in bed they ceased, and she was well until June, 1894, when she had another profuse hemorrhage, which came from a soft, reddish tumor, the size of a walnut, which was situated on the lower part of the anterior vaginal wall.

This was removed and the uterus curetted. The uterine scrapings showed nothing abnormal; while the examination of the vaginal tumor by Marchand showed that it contained long villous structures, which he considered identical with those observed by Gottschalk[12] in his case of sarcoma chorii.

The vaginal growth recurred with great rapidity, and soon another appeared alongside of it. At the same time a tense tumor appeared above the symphysis. July 4th she developed the symptoms of peritonitis, and, during a laparotomy for it, her respiration ceased and she died.

The autopsy showed that the uterus was perfectly normal and that the growth arose from the left tube, which had been the seat of a tubal pregnancy. Beside the metastases in the vagina, there were numerous small placental-like thrombi in the lungs, but none in other organs.

We have already referred to the microscopic structure of the tumor, and stated that Marchand considered it composed of maternal syncytium and fœtal ectoderm.

The only respect in which the syncytial masses in this case differed from those in ours was in the fact that portions of its free margins presented a row of thin protoplastic offshoots which upon superficial examination appeared as cilia, but

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which closer examination showed were due to the formation of large numbers of very small vacuoles along its edges.

It is thus seen that four cases have already been recorded in the literature which bear a very close resemblance to our own case. Those of Gottschalk[12] and Marchand[36] being practically identical with it, as far as their histological structure is concerned, but differing markedly from it according to the interpretation of the observers. As pointed out above, we differ absolutely from Gottschalk[12] in the interpretation which he places upon his case, and are inclined to consider it identical with our own.

We might say the same of Marchand's[36] case, were it not vouched for by so able an observer; but, under the circumstances, we hesitate to question the correctness of his interpretation, and shall only suggest the possibility that the cells, which he considers derived from the fœtal ectoderm, may after all only represent cross-sections through syncytial masses.

It is evident that our case, as well as those just referred to, differ very materially in their minute structure from those described by Sänger,[52] Pfeifer,[49] Chiari,[6] and others. For in their cases the cells, which make up the solid portions of the tumor and form the walls of the blood spaces, correspond in all respects to typical decidual cells. In none of them were syncytial masses found and all presented a well-marked connective-tissue stroma. All these observers lay considerable stress upon this point, and Sänger,[52] in his monograph, gives a drawing, which positively demonstrates its presence in his case.

All these tumors presented a distinctly sarcomatous structure and appear to have been well characterized by the term sarcoma uteri deciduo-cellulare, which Sänger first proposed for them.

In all the cases, however, the matter was not so clear, for in several, especially those described by Pestalozza,[45] Löhlein,[33] Nove-Josserand and Lacroix,[42] and Klien,[25] beside the well-marked decidual cells, other smaller cells of a distinctly sarco-

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matous appearance were observed, and in some cases composed the greater part of the growth. Thus, Pestalozza[45] did not designate his case as a decidual cell sarcoma at all, but simply as a hemorrhagic infectious sarcoma, and Lōhlein[33] described his case as "sarcoma uteri partim deciduo-cellulare post-myxoma chorii."

The tumors which were very briefly described by Schmorl[54] and Koettnitz[27] were stated to be composed of both fœtal and maternal tissue, and their significance was so obscure that Schmorl[54] hesitated to express himself as to their exact nature, and proposed to designate them by the neutral term "blastoma chorion-deciduo-cellulare."

It is thus apparent that the growths, which have been described as malignant deciduomata or by other more or less cognate terms, differ very materially among themselves, and an idea as to the difficulty of their correct interpretation is, perhaps, best given by simply enumerating the various designations which have been applied to them.

Thus, for example, Sänger[50] first designated his case as deciduoma malignum, and later as sarcoma uteri deciduo-cellulare; Gottschalk[11] at first called his case sarcoma chorion-deciduo-cellulare, and later sarcoma chorii; Schmorl[54] designated his cases and the one observed by Koettnitz[27] by the neutral term, blastoma chorion-deciduo-cellulare. Pestalozza[45] called his case infectious hemorrhagic sarcoma; Fraenkel,[8] carcinoma arising from the chorionic epithelium; Guttenplan,[14] hemorrhagic sarcoma; Meyer,[39] epithelioma papillare uteri; Klebs,[24] placentar papilloma; and Klien,[25] deciduo-sarcoma uteri giganto-cellulare.

But, in spite of differences in anatomical structure, these variously designated tumors form a distinct clinical group. They all follow closely upon some form of pregnancy, either abortion, full-term pregnancy or hydatidiform mole, and quickly lead to the death of the patient with the very rapid formation of metastases, especially in the lungs and vagina.

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They all present the same hemorrhagic structure, and in their gross appearance resemble placental tissue.

Now, is it not possible to group all these tumors together under some distinctive designation, which will enable us to speak of them from a clinical standpoint, without at the same time committing ourselves as to their intimate structure and origin? We believe that it is, and we consider that the term deciduoma malignum, which Sänger[50] first proposed for his case, is best suited for the purpose.

We must remember that the decidua represents the metamorphosed uterine mucous membrane, and accordingly consists of both epithelial and connective-tissue elements; while the hypertrophied connective-tissue cells, of course, represent its most striking and characteristic feature.

The tumors, to which Klotz[26] and Küstner[30] were the first to apply the term deciduoma, consisted of small tumor formations, which were made up of hyperplastic decidua and contained both decidual cells and glandular structures. Now, we likewise believe that malignant tumors may be derived from either the connective-tissue or epithelial elements of the decidua, or perhaps from both at the same time, and all of them, clinically speaking, may, not improperly, be designated as malignant deciduomata.

If the new growth be derived entirely from the connective-tissue cells, we shall have the typical sarcoma deciduo-cellulare of Sänger;[42] but if it be derived from the epithelial elements, which normally form the syncytium which covers the chorionic villi, we shall have a tumor made up of syncytial masses, similar to ours and those of Meyer,[39] Gottschalk,[12] Fraenkel,[8] and others, which are essentially carcinomata.

As Merttens[38] has demonstrated that not only the surface epithelium of the decidua, but also portions of the glandular epithelium as well, are transformed into syncytium, and also that syncytial processes make their way from the surface epithelium a certain distance down into the stroma, it is possible to conceive that both tissues may simultaneously take on a

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malignant growth, and give rise to a mixed tumor composed of both decidual cells and syncytial elements, which are very intimately blended together.

No one has as yet definitely described such a tumor, but it is possible that the cases which Schmorl[54] and Koettnitz[37] considered were made up of both fœtal and maternal elements may belong in this category, as they probably regarded the syncytium as fœtal in origin. This is, however, a mere supposition, for they failed to publish a minute anatomical description of their specimens.

We believe, however, that the case, which Menge[37] has lately described as deciduo-sarcoma uteri, belongs in this category. In it he clearly distinguishes two well-marked varieties of cells. "One, which resembles the epithelial cell, in which the protoplasm has remained almost unstained; and another, which recalls an hypertrophic muscle cell, and in which the protoplasm stains in about the same way as in the unchanged muscle." And later on he says: "The relation of the two kinds of cells to one another does not appear to be quite without rule (regellos), but one often gets the impression as if a small group of the pale epithelioid cells were surrounded or framed in by two or more of the large intensely stained elements, so that depressions or hollows appear to be formed on their margins, into which the smaller cells fit."

He considers that the epithelioid cells are derived from decidual cells, which is apparently borne out by finding a small amount of connective-tissue stroma between them; while he believes that he has definitely proven that the other cells, with the deeply staining nuclei and protoplasm, are derived from muscle cells. This latter point, however, does not appear so clear to us.

Dr. Menge, on hearing of our case, very kindly sent us several slides from his tumor for comparison. There is absolutely no doubt that his tumor is made up of two distinct varieties of tissues: the epithelioid cells and those which he considers are derived from the muscle cells. We are inclined

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to agree with him as to the decidual origin of the epithelioid cells; but close examination showed us that the elements which he considers represent hypertrophic (gewucherte) muscle cells are not individual cells at all, but consist of a granular protoplasm, in which intensely staining nuclei are deposited without any trace of division into individual cells; in other words, are syncytial bands, just as in our case.

It will be remembered that we were at first inclined to consider the syncytial bands in our case as transformed muscle cells, but closer examination revealed our error.

The syncytial tissue in his case is quite similar to that in ours, and we are disposed to consider it identical with chorionic epithelium.

Accordingly, in his case, we have to deal with a tumor made up of decidual cells (admitting their connective-tissue origin), and syncytium, or a tumor derived from both the connective-tissue and epithelial elements of the decidua, if we accept the maternal origin of the latter.

From an onkological standpoint, therefore, admitting our interpretation, Menge's[37] case is a mixed sarcoma and carcinoma or a carcino-sarcoma of the uterus, which has followed an hydatidiform mole, which, anatomically speaking, should be distinguished from the other varieties of deciduoma malignum. But it closely resembles the other cases in its clinical history and gross appearance, and from a clinical standpoint should be classed among them.

We would, therefore, designate this entire group of tumors by the term deciduoma malignum, as they are all, with the possible exception of Marchand's[36] case, derived from one or both of the component parts of the normal decidua. We, however, wish it distinctly understood that we recommend this general term purely for convenience in clinical work, and do not wish anyone to imagine that we consider the various tumors identical in anatomical structure. For they differ absolutely among themselves, some being sarcomata, some carcinomata, and others mixed tumors, and we do not wish to

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be placed in the same category with Beach,[3] who says: "When the entire literature presents some sixteen cases of deciduoma, it would be worse than useless to attempt to divide them into different forms and varieties."

In the articles of Pestalozza,[45] Nove-Josserand and Lacroix,[42] Klien,[25] and Menge[37] it is stated that a certain proportion of the cells, which compose the tumor, are derived from the muscle cells. We were at first inclined toward a similar origin for some of the cells in our case, but, as stated above, more careful examination showed that the changes in the muscle cells were of a degenerative character, more or less similar to those observed by Bacon[2] in a case recently described from Chiari's laboratory. We believe that we have likewise shown that Menge[37] was in error in believing that a part of his tumor was derived from them. Nor do we find anything in the cases of Nove-Josserand and Lacroix[42] and Klien[25] which lend marked support to this view. We would not, however, absolutely deny the possibility of such changes, for we ourselves[64] were the first to demonstrate conclusively the direct transformation of muscle into sarcoma cells.

The malignant deciduomata, and especially those which are made up wholly or in great part of syncytial cells, are no doubt closely related to the so-called destructive hydatidiform moles (interstitielle, destruirende Molenbildung), which have been described by Wilton,[66] Volkmann,[63] Jarotsky and Waldeyer,[19] and Krieger,[29] in which myxomatous villi have made their way into the vessels of the uterine wall and almost completely destroyed it. In Wilton's[66] case, the uterine wall was perforated by the growth, and the woman died from hemorrhage into the peritoneal cavity. Unfortunately, none of these cases were examined microscopically, so that we are ignorant of their finer structure.

Beach[3] has lately decribed a case as deciduoma malignum, which was demonstrated before the Anatomical Society of Paris by Hartmann and Toupet,[15] in which the patient died from uterine hemorrhage after the uterus had been cleaned out

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several times. Only an incomplete autopsy was permitted, but no metastases were found in any of the abdominal organs. The left angle of the uterus and its posterior wall were occupied by a blackish mass, which resembled placental tissue, and two nodules, the size of a hazelnut, were situated on its fundus and posterior wall. On section through the uterine wall they were seen to be grayish white in color, pulpy, and less consistent than the surrounding tissue. They extended through the entire thickness of the uterine wall and were continuous with the placental-like mass of its interior. The uterine wall was studded by many similar but smaller nodules, all of which were developed within veins. They consisted of villous structures, which contained a connective-tissue stroma, containing bloodvessels, outside of which was a layer of syncytium. They apparently represented but slightly changed chorionic villi, which had gained access to the vessels and there undergone proliferation.

We cannot agree with Beach[3] in regarding the case as a deciduoma malignum, and consider it related to the destructive hydatidiform moles, to which we have just referred, or perhaps more nearly to the destructive placental polyps, which have been described by von Kahlden[21] and Zahn.[67] It is evident, from his own words, that he does not comprehend the nature and significance of the malignant deciduomata; for, in summing up the anatomical study of his case, he says: "The nature of this tumor is very plain; it is a tumor composed of placental tissue, and if, moreover, we notice how much vitality belongs to this neoplastic tissue, how profoundly it infiltrates the uterine muscle, it is impossible not to see that we have the characteristics of a malignant tumor, thus the name deciduoma malignum seems most appropriate to this variety of neoplasm."

FREQUENCY. There is no doubt that malignant deciduomata are of much more frequent occurrence than is generally supposed, and many cases have been observed and described as carcinoma, sarcoma, or carcino-sarcoma of the uterus.

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We have already stated that Chiari[6] described his first three cases as carcinomata, and many others have doubtless done likewise.

Up to the present twenty-five cases, including our own, have already been described as deciduoma malignum, sarcoma uteri deciduo-cellulare, or by more or less cognate terms. This includes three cases of Chiari,[3] two of Schmorl,[54] and one each of Sänger,[50] Pfeifer,[49] Blanc,[4] P. Müller,[41] Löhlein,[33] Koettnitz,[27] Gottschalk,[11] Menge,[37] Pestalozza,[47] Paviot,[43] Nove-Josserand and Lacroix,[42] Klien,[25] Jeannel,[20] Boldt,[5] Beach,[8] Ahlfeld,[1] Schauta,[53] Bacon,[2] Tannen,[58] and ourselves.[65] As we shall show later, it is doubtful whether four of these cases should be included under this broad heading, namely, those of Blanc,[4] Paviot,[43] Boldt,[5] and Beach;[8] thus leaving twenty-one cases which have been definitely described and which undoubtedly belong in this category.

There is likewise no doubt that the two cases which Pestalozza[45] described as infectious hemorrhagic sarcoma, and one described by Guttenplan[14] as hemorrhagic sarcoma, as well as the epithelioma papillare of Meyer,[39] and the carcinoma chorii of L. Fraenkel,[8] all belong in the same group. Thereby giving us twenty-six cases, which, at least from a clinical standpoint, should surely be classed among the malignant deciduomata.

The case which Blanc[4] describes as a deciduo-sarcoma certainly does not belong in this category. It possibly represents a fibroid degeneration of the decidua serotina, as suggested by Sänger,[52] or may simply be a partially organized placental infarct, which remained in the uterus after the manual removal of the placenta. All anatomical details are lacking in the very short report of Boldt's[5] case, so that it is impossible to be sure with what he had to deal; and we have already shown that Beach's[8] case should be classed among the destructive placental polyps.

Paviot's[43] case occurred in a woman, aged forty-eight years, who had suffered with uterine hemorrhage for thirteen years. At the autopsy the uterus was as large as a fœtal head, its left

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and inferior portion being made up of an adenomatous growth, while its right and superior portion was made up of a dense, somewhat fragile, and granular tissue. There were metastases in the peritoneal cavity, the mesenteric and prevertebral glands, lungs, liver, and kidneys, which were reddish in color, slightly granular, sharply marked off from and readily peeled out from the surrounding tissue. The uterine growth and the metastases were composed of large epithelioid cells, with granular protoplasm and one or two deeply staining nuclei, between which there was a marked connective tissue-stroma. Neither the uterine growth nor the metastases presented the markedly hemorrhagic structure which was so characteristic of the other cases of deciduoma. Nor were we able from his description or his highly diagrammatic drawings to identify the epithelioid cells with those of the decidua. When we add to this the fact that the woman was a widow, who had never become pregnant in twenty years of married life, and who gave no history of a pregnancy preceding her last illness, we are obliged to hesitate to class the case among the malignant deciduomata; though, of course, we do not desire to deny its possibility.

We also agree with Sänger[53] that it would be unwise to attempt to class the cases which R. Maier[35] designated as a deciduoma among the tumors in question; for it is impossible to determine from his description exactly what it is, but it evidently does not belong among the malignant deciduomata.

On the other hand, it is more than probable that the case mentioned by Zweifel,[68] in the discussion on Menge's paper before the Leipzig Obstetrical Society, in which the woman died with persistent uterine and pulmonary hemorrhages some months after the expulsion of an hydatidiform mole, belongs in this category. And the same may be said of one of Jacubusch's[18] cases, in which death resulted from intraperitoneal hemorrhage four months after a four months' abortion. The hemorrhage being due to the rupture of a bluish-red nodule, the size of a hazelnut, which was situated on

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the posterior wall of the uterus. In addition to which there was a tumor of similar character (5 by 6 cm.) in the fundus of the uterus, and six other smaller nodules, varying from a pea to a walnut in size. Jürgens, who performed the autopsy, designated the case as "sarcoma teleangiectodes hemorrhagicum multiplex uteri et metastaticum colli uteri," but no microscopical examination was made.

Sänger,[52] likewise, includes among the probable cases a case of sarcoma of the uterus following an hydatidiform mole, which was reported by Kaltenbach;[22] and a case of Lebensbaum,[32] which was reported as "carcinoma of the vagina, resulting from implantation from carcinoma of the corpus." But in both cases the microscopic description was too meagre to enable one to express a positive opinion concerning them.

It is also possible that two cases, which Veit[60,61] described as carcinoma of the body of the uterus, may also have been deciduomata. Especially one, to which he refers in the article by Ruge and himself,[61] on carcinoma of the body of the uterus, which he stated was analogous to the tumors described by Chiari (but which the latter subsequently stated were malignant deciduomata). It was examined by Jürgens, who left the diagnosis between carcinoma and sarcoma in suspenso, and Veit said "er hielt es für ein Mischform beider, ein Vorkommen, das jedenfalls durch die den Sarkomzellen ähnlichen Deciduazellen gerade kurz nach einem Abort möglich erscheint. Wir fuhren den Fall weil nicht von uns näher betrachtet, hier nicht in extenso, an, wollen ihn aber gerade bei der Aehnlichkeit mit Chiari's Fällen erwähnen."

There can be no doubt that at least some of these cases were really malignant deciduomata; but leaving them out of account, as well as the doubtful cases of Boldt[5] and Paviot,[43] it is seen that at least twenty-six cases have already been described, which, from a clinical standpoint, should undoubtedly be classed among the malignant deciduomata; and no doubt they will increase very rapidly in number now that general attention has been directed to them.

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ETIOLOGY. Just as is the case with all other malignant tumors, the etiology of the growth before us is unknown. The most striking etiological factor in connection with them is the marked relationship in which they stand to some form of pregnancy; all the cases having followed labors at full term, abortions, or hydatidiform moles. The only exception in this regard being the problematical case of Paviot,[43] in which there was no history of a pregnancy preceding the formation of the tumor; and to overcome it, Paviot himself supposes that an early abortion had occurred, which was masked by the continuous uterine hemorrhage, which had existed for years.

It is interesting to note that a very considerable proportion of the cases followed hydatidiform moles, and upon analyzing the 26 cases, which we consider undoubtedly belong in this group, we find that 11 cases followed hydatidiform moles; 6 cases followed full-term pregnancies; 5 cases followed abortions; 1 case followed a tubal pregnancy; and in 3 cases it was not definitely stated what form of pregnancy had preceded the appearance of symptoms.

When we consider the marked infrequency of hydatidiform moles in general, and the very large proportion of the cases of deciduomata which have been preceded by them, it is difficult not to believe that they stand in some sort of causal relation to them. And Sänger,[52] in his monograph, carefully divided the cases into two groups, according as they followed hydatidiform moles or not.

It does not appear to us, however, that any particular histological difference can be noted in the cases which were preceded by moles and those which followed ordinary pregnancies. And it appears to us, if the moles played any very important part in the production of the growths, that we should find something in their structure to indicate this mode of origin. But we find both typical decidual cell sarcomata as well as tumors composed wholly or in part of syncytium following moles and normal pregnancies without distinction. It is quite possible



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that this may be the case in those instances in which symptoms appear soon after the expulsion of the mole; but it can scarcely apply to the cases in which a year or eighteen months elapse between the expulsion of the mole and the first appearance of symptoms. An observation of Pestalozza,[48] however, would tend to indicate that there is some definite relationship between the two. For he has reported two cases of hemorrhage following moles, which persisted after curettement and compelled him to remove the uterus. In both uteri he found giant cells as well as masses of cells with nuclei rich in chromatin, which he considered very similar to chorionic epithelium, and which he considered were probably derived from the epithelium of the myxomatous villi.

In the present state of our knowledge, however, we believe it would be unwise to attempt to prove that the mole may give rise to the deciduoma, or the reverse, and must content ourselves by simply stating the fact that, in eleven of the twenty-six cases to which we have referred, the occurrence of symptoms was preceded by the expulsion or manual removal of an hydatidiform mole.

In our case the occurrence of vulval metastases, less than two weeks after the full-term labor, would lead one to suppose *à priori* that the primary tumor had developed during pregnancy rather than in the very short interval which elapsed between the completion of labor and the appearance of the metastasis at the vulva. But the small size of the primary tumor at death, three months after the labor, militates somewhat against this view; for it must be supposed that it increased in size during this period, and consequently must have been much smaller at the time the first metastasis was developed. On the other hand, it is quite possible that they developed during pregnancy, but owing to their small size did not interfere with it and allowed it to go on to full term.

The occurrence of metastases in less than two weeks after the labor is not, however, inconsistent with the development of the tumor after the completion of labor. For Schmorl,[55]

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in his very valuable contribution to our knowledge of puerperal eclampsia, has shown that we may find thrombi in the pulmonary arteries, which are composed of placental giant cells, without any trace of tumor formation about the uterus or placenta. And it would be only necessary to suppose these cells endowed with malignant properties to account for the very rapid formation of metastases. In several cases of tubal pregnancy we have likewise found thrombi of chorionic epithelium in venous channels of the tube wall, far removed from the site of pregnancy. And Pestalozza,[46] in one instance, following the expulsion of an hydatidiform mole, found pulmonary thrombi composed of apparently unchanged myxomatous chorionic villi.

These observations all teach that it is possible for chorionic and perhaps decidual elements to make their way into venous channels and reach remote portions of the body either during or just after pregnancy in conditions which have nothing to do with tumor formations. This being the case, we can readily imagine that the same may occur in the earliest stages of malignant growths connected with the placenta or decidua, and thus give rise to metastases at a very early period, which, under favorable local circumstances, may exceed the primary growth in size.

Clinical History. In contradistinction to the usual forms of malignant uterine growths, the vast majority of the cases of deciduoma malignum occur in young women. An analysis of the 26 cases shows that they all occurred before the menopause and were divided as follows:

1 case occurred at the seventeenth year; 12 cases occurred between twenty and thirty years; 5 cases occurred between thirty and forty years; 4 cases occurred between forty and fifty years; 1 case occurred at fifty-five years; and in 3 cases the age was not given.

The most constant symptom is uterine hemorrhage following some form of pregnancy. In some cases it begins almost immediately after the completion of the labor or abortion,

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but in others it does not make its appearance until some months later. The hemorrhage, as a rule, is not continuous, but occurs at intervals and is generally of a gushing character, indicating the invasions of a vessel. The uterus is enlarged, and upon dilating it and introducing a finger its cavity is found to be more or less completely filled by a soft reddish placental-like mass, which is readily scraped away, when the finger sinks into an irregular depression, which in some cases extends almost through the entire thickness of the uterus.

The tumor masses recur rapidly after removal, and within a few days the uterus may be once more filled with them. In other cases, however, the uterine hemorrhage is not a prominent symptom. In Sänger's[50] case it ceased entirely after a single curettement and thus completely masked the real nature of the disease; while in our own case it did not occur at all, and attention was first called to the case by the appearance of vulval metastases. In Sänger's case the absence of uterine hemorrhage and the occurrence of cough, hæmoptysis, and the development of a fungoid tumor in the iliac fossa caused the case to be regarded as one of tuberculosis, although no bacilli could be found in the sputum.

The rapid formation of metastases and early death are the characteristic features of this form of tumor. Metastases are most frequently observed in the lungs and vagina; pulmonary metastases being observed in nearly every fatal case; while vaginal metastases were observed in 58 per cent. of the cases. The occurrence of vaginal metastases is very characteristic; for they are rarely noted in carcinoma of the uterus, and only occasionally follow the usual forms of uterine sarcoma.

Several observers are inclined to regard the vaginal metastases as due to implantation of bits of tissue from the uterus, but their very frequent occurrence and especially the fact that they occurred in Ahlfeld's[1] case, in which the tubal situation of the primary tumor apparently excluded such a mode of origin, renders it apparent that they do not all originate in that way. And in certain cases, at least, must be due to in-

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fection through lymphatic or venous channels, though the arrangement of the pelvic vessels renders such a mode of origin difficult of explanation.

The cases run a very rapidly fatal course and death usually occurs within six months from the first appearance of the symptoms, our case dying in less than three months after the completion of labor.

DIAGNOSIS. Now that attention has been directed to this class of cases, a probable clinical diagnosis may readily be made in advanced cases. The occurrence of uterine hemorrhage following soon after a normal pregnancy, abortion, or hydatidiform mole, which soon recurs after curettement and associated with vaginal metastases or symptoms indicating pulmonary involvement, presents a clinical picture which leaves but little room for doubt.

The diagnosis of the early stages of the growth is not, however, so easy a matter, and can be made only by means of the microscope. In view of the rapidly fatal character of these tumors, and their intimate connection with some form of pregnancy, their early diagnosis is a matter of the greatest possible moment; for it is only by very early operation that we can hope to prevent the formation of metastases.

Consequently, we must regard with anxiety hemorrhage occurring in the later part of the puerperium or in the period immediately following it, especially when the pregnancy terminated in the expulsion of an hydatidiform mole. In such cases, we shall not do our duty by our patients if we procrastinate and suppose that we have to deal only with hemorrhage resulting from retained membranes, a placental polyp, or an endometritis post partum; for a few days' delay may afford the short period necessary for the formation of metastases and render futile all operative interference. But in all such cases we should promptly dilate and curette the uterus, preceding the latter by a digital exploration of its cavity if possible, and then submit the scrapings to a competent microscopist for examination.

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If we have to deal with a malignant deciduoma, the presence of decidual cells or masses of syncytium, making their way between the muscles, will enable us to make a positive diagnosis. Diagnoses have been made in this way by Gottschalk,[11] Löhlein,[33] Menge,[37] Nove-Josserand and Lacroix,[42] Schauta,[53] and Tannen,[56] and have been verified by the examination of the uterus after operation or death.

In Ahlfeld's[1] case a diagnosis of sarcoma chorii (Gottschalk) was made by Marchand upon the examination of the vaginal metastasis.

TREATMENT. Owing to the very rapid formation of metastases, many cases will occur in which all operative procedures will be futile. But when the diagnosis is made early, and there is no evidence of the formation of metastases, total extirpation of the uterus, with its appendages attached, is urgently indicated.

Thus far seven cases have been operated upon in this manner by Gottschalk,[12] Löhlein,[33] Menge,[37] Nove-Josserand and Lacroix,[42] Jeannel,[20] Schauta,[53] and Tannen.[56] The cases of Menge, Gottschalk, and Löhlein all died from recurrence of the growth, six, seven, and twelve months, respectively, after the removal of the uterus. The other four cases recovered from the operation, but sufficient time has not elapsed since to enable us to judge of its ultimate success.

Thus no subsequent report was made upon Jeannel's case. The case of Nove-Josserand and Lacroix was well three months after the operation. Schauta's case had a vaginal metastasis when operated upon, and naturally offers a very gloomy prognosis. Tannen's case was perfectly well nine months after the operation, having gained twenty pounds in weight.

It is thus seen that the operative treatment has not been crowned with very great success, and it is probable that several of the four cases just mentioned will succumb to a recidive. It is, however, the only chance of saving the

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patient's life and should be resorted to as soon as a diagnosis is made, if metastases are not already present.

P. S.—Marchand's article was not concluded when this article was written, consequently its latter portion is not referred to by us. It may be found in the July number of the *Monatsschrift für Geb. u. Gyn.*

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# DEEP INCISION OF THE PARTURIENT CERVIX FOR RAPID DELIVERY.

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In view of the fact that the cause of puerperal eclampsia is still an unknown quantity, the scientific preventive and curative treatment of the condition becomes a dream of the future. We believe that eclampsia bears a certain relationship to albuminuria, but in some 16 per cent. of cases of puerperal convulsions no albumin is found in the urine before the attack, and in a certain proportion none afterward.

We look upon the condition as a toxæmia,[3] an auto-infection, an accumulation in the blood of a toxic material, urinary or fæcal, or both, and we believe that some women will withstand a much larger quantity of this poison than others, but what this toxic material is we do not to-day know.

Clinically we know that an eliminative treatment secures the best results for the toxæmia of pregnancy, which is usually first indicated by symptoms of kidney failure; and clinically, once more, we know that an eliminative treatment which includes an early evacuation of the uterus gives us the best chance of saving mother and child in the presence of an actual eclamptic attack. Some four years ago, Dührssen[11] made the positive statement that "in all cases in which the defective dilatation affects only the vaginal portion of the cervix, and grave danger threatens mother or child, it is to-day the duty of every obstetrician who is skilled in diagnosis, technically expert and antiseptic, to dilate the os completely by from two

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to six deep incisions reaching as far as the attachment of the vagina, and deliver the patient."

The conclusions of Dührssen[10] in the application of this mode of delivery to cases of eclampsia are:

1. That after operation, under short, not prolonged, deep anæsthesia, during which the uterus is emptied, eclamptic attacks cease in 93.75 per cent. of the cases.

2. The prognosis of operations performed for eclampsia is not graver than the prognosis of gynecological operations performed for diseased conditions other than eclampsia.

3. The prognosis in eclampsia is aggravated by the number of attacks, whether an operation is performed or not. In this connection it must be remembered that there are many instances of death after very few attacks, but in these cases cerebral hemorrhage or fat emboli of the lungs cause death. And if death can ensue from a few attacks from pulmonary emboli or a cerebral hemorrhage, it only shows how dangerous it is to wait and reason and look for prognostic points.

4. Again, when eclampsia occurs in the puerperium, the mortality is a little more than *nil;* hence, when we immediately empty the uterus in pregnancy or labor, we place our patient in the same favorable condition as the woman finds herself when eclampsia occurs after delivery.

Dührssen's results have certainly been brilliant, as by this treatment applied to eclampsia in thirty-five cases he saved all the mothers and all but two of the children. Such positive statements, and apparently radical measures, called forth from Charpentier,[4, 5] in Paris, some two years afterward, an exhaustive article including a statistical analysis of four hundred and fifty-four cases of eclampsia treated by various methods by seven different observers. In this article Charpentier claims that in eclampsia his statistics prove:

1. That labor should be waited for and terminated naturally whenever possible.

2. That induced labor should be reserved for exceptional cases in which medical treatment has entirely failed.

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3. That interference should be delayed until the cervix is dilated or dilatable, so as to avoid danger to the mother; that in eclampsia Cæsarean section, manual dilatation of the cervix, and especially deep incisions of the cervix, are absolutely unjustifiable.

Charpentier, in this statistical analysis of the different methods of treating eclampsia, and of the method known as Dührssen's deep incisions of the cervix, arraigns the latter in very forcible language, characterizing the operation as brutal and unjustifiable.[1] He places himself in "resolute opposition to forced labor, . . . and even to induced labor, which he reserves for exceptional cases where medical treatment fails." He rejects absolutely forced labor by deep incisions of the cervix. From this analysis of the 454 cases, which included all known methods of treatment of eclampsia, he has constructed the following table:

| | |
|---|---|
| Mortality from spontaneous labor . . . . | 13.93 per cent. |
| Mortality from artificial labor . . . . | 29.13 " |
| Mortality from Cæsarean section . . . . | 36.26 " |
| Mortality from forced labor . . . . . | 40.75 " |

The infant mortality in the 454 cases was 164, or 36.12 per cent. Charpentier concludes that the best treatment in eclampsia is to wait until labor begins, and let it alone unless absolutely necessary to interfere. In the meantime he administers chloroform, and bleeds if the patient be robust.

In the discussion of this paper, participated in by Tarnier, Gueniot, Robin, and others, chloroform and chloral appeared to be the favorite drugs. In no instance was forced labor advised.

On the other hand, however, it would appear from the literature of the past four years that the bulk of medical

[1] It is worthy of note that the enthusiasm with which Dührssen advanced the operation, and the wide field which he gave to it in his original paper, have in his subsequent communications upon the subject been markedly restricted. The operation is now limited by him to extreme emergency, threatening immediate death to mother or child.

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opinion is in favor of emptying the uterus in as short a time as possible in instances of eclampsia, whether the attack occurs before or during labor, although there is a wide range of opinion as to the means to be employed. In the second stage of labor, after dilatation has been secured, all authorities are agreed that the immediate emptying of the uterus is indicated, and is to be promptly performed. The indication under such circumstances is readily carried out without additional danger to mother or child. In pregnancy, and the first stage of labor, the undilated cervix is the barrier to immediate delivery, and it is here that obstetricians differ so widely as to the best method of procedure. An expectant or palliative treatment means almost certain loss of the child, and something like one-third of the mothers are lost. On the other hand, the child is saved, and the mother is practically safe, as far as the eclampsia is concerned, if the uterus is immediately emptied by appropriate surgical means.

Two indications would appear to be generally agreed upon:

1. Control the convulsions, preferably with chloroform.

2. Empty the uterus, under deep anæsthesia, by some method that is rapid, and that will cause as little injury to the woman as possible.

During pregnancy and the early part of labor, four procedures are offered for rapidly emptying the uterus, viz.:

1. Cæsarean section.

2. Mechanical dilatation of the cervix (various methods).

3. Deep incisions which at once completely remove the barrier of the cervix.

4. Combined mechanical dilatation and deep cervical incision.

The first method, Cæsarean section, for the relief of eclampsia, still carries with it a high mortality (36.26 per cent., according to Charpentier's figures[4, 5]); moreover, there are many objections to its employment, as uterine atony and hemorrhage, the irritation of the uterine and abdominal scars, and of the curative peritonitis about the uterine sutures, all of which are

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to be avoided as exciting causes of subsequent eclamptic seizures.

The second method, the mechanical dilatation of the cervix and the immediate extraction of the fœtus, appears to be the popular method of the day.

Properly performed the method is safe and efficient.

Before dilatation is well advanced, however, from forty minutes to an hour and a half is necessary to safely carry it out, and certain conditions of the cervix, even in this time, refuse to yield to manual dilatation or result in lacerations into the lower uterine segment. The third method of delivery, by deep cervical incision, offers us a surgical means for emptying the uterus in from five to ten minutes, provided that the supravaginal portion of the cervix has disappeared, or is made to disappear by appropriate means. The fourth or combined method is a combination of the second and third, and is applicable to cases in which the supravaginal portion of the cervix is still present, and rapid emptying of the uterus is demanded. Here mechanical dilatation of the os until the internal os has been made to disappear is made use of, and the dilatation then in an instant completed by the incisions. The third method and its modification, the fourth, are comparatively new, and we have few statistics as to the results of the operation. Its originator, Dührssen, operated in thirty-five cases, saving all the mothers and only losing two children. Dr. S. Marx,[19] of New York, has operated six times, saving five women and five children. The fatal case was practically moribund from eclampsia when operated upon, and the fœtus in this case was macerated and of the eighth month.

The three cases of delivery by means of deep cervical incisions which are reported to the Society to-day are, we believe, worthy of attention, because we were enabled, subsequent to the operation, to make a critical study of each.

In Case I., operated upon over a year ago, mother and child were saved, and the patient, who is still under observation, apparently suffers no inconvenience from the operation, other

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than from a partially united bilateral cervical laceration that might have followed normal labor. This woman had eight convulsions before operation and delivery. No eclamptic attacks followed the operation.

In Case II. the woman was brought to the hospital in coma with total suppression of urine and acute parenchymatous nephritis. She was practically moribund from eclampsia when operated upon, and died sixteen hours after delivery, never having regained consciousness. Her child was saved. An autopsy enables us to study the effect of the incisions upon the cervix. This woman had nine convulsions before the uterus was emptied, and, as in Case I., a severe eclamptic attack within the half-hour preceding delivery. Two slight convulsions occurred after the uterus was emptied, the first two hours after delivery, and the second three hours and fifteen minutes.

In Case III. the patient entered the hospital in a generally water-logged condition, with commencing pulmonary œdema. An eclamptic convulsion took place twenty-five minutes after admission, and two convulsions occurred in the fifty minutes preceding operation, in spite of the use of chloroform. By the fourth or combined method of delivery, above referred to, the woman and her twins were saved and are alive to-day.

CASE I.—Mrs. H., aged twenty-two years, primapara, eighth month of pregnancy, married one and a half years, German, housewife; brought by ambulance to the Emergency Hospital in partial coma late upon the evening of November 22, 1893. It has since been ascertained that up to the time of her first convulsion upon the morning of November 21, 1893, her pregnancy had been apparently a normal one, she not even having suffered from the usual morning sickness. Upon the morning of November 21st she was taken with severe headache, which increased in intensity until some time in the afternoon of the same day, when she fell on the floor in her first convulsion; a physician was called, who remained with the patient three hours, during which time several convulsions took place, for which morphine was ad-

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ministered, and this drug failed to control the seizures. During this time her condition was one of partial coma; the urine, drawn by catheter, was of low specific gravity and loaded with albumin; convulsions occurred at short intervals. The seizures presented the usual clinical picture of eclampsia. A vaginal examination then revealed a rather firm, hard cervix for the eighth month of pregnancy; the index finger could be passed to but not through the internal os, and the cervical canal was of usual length, there being no drawing up of the supravaginal portion of the cervix. No uterine contractions were present. The bowels were moved by croton oil and high enemata of sulphate of magnesia; perspiration was induced with hot-air baths, and cups applied over the kidneys. Full doses of nitroglycerin were administered by needle, and an attempt made to control the convulsions by inhalation of chloroform and the giving of large doses of chloral hydrate and the bromide of soda by rectum. This treatment was only partially successful. Two bougies were passed to the fundus of the uterus for the purpose of inducing labor. In the periods of partial consciousness small quantities of milk and hot water were swallowed by the patient.

Upon November 22, 1893, the day following, the case was transferred to the Emergency Hospital. At this time the patient was partially unconscious, and in spite of chloroform, chloral, and bromide had suffered from several convulsions and had just passed through an eclamptic attack. A vaginal examination now showed that the internal os barely admitted the index finger, and that the two bougies introduced into the uterus and as high as the fundus the day before had accomplished little more than to cause a partial disappearance of the supravaginal portion of the cervix and an occasional weak uterine contraction.

Immediate delivery was decided upon, which was accomplished in the following manner:

The vagina was scrubbed and cleansed as for a hysterectomy, the vulva shaved, chloroform given to the surgical degree, and with a steel dilator the os was enlarged until it readily admitted he index finger. Digital dilatation of the os was then practised carefully for twenty minutes, at which time the supravaginal portion of the cervix was made to disappear. The os now admitted

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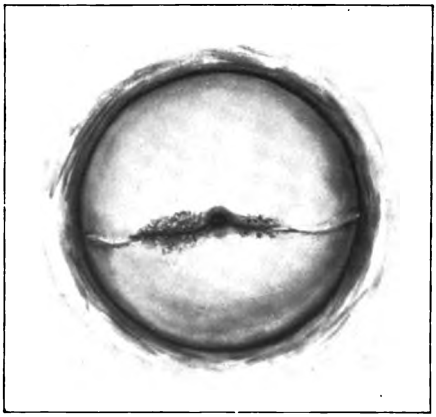
FIG. 1.



Condition of cervix in Case I. thirteen months after operation. Partial repair has taken place in the bilateral incisions.

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the first and second fingers. The woman's pulse at this point became weak and irregular, so with angular scissors two deep lateral incisions were made from the border of the external os fully up to the utero-vaginal junction of each lateral vaginal fornix. Free hemorrhage followed the incisions, which ceased when the hand and forearm were introduced into the uterus, the anterior foot seized, and the child rapidly delivered by podalic version and extraction. The child, a male, with a development corresponding to the eighth month, although deeply asphyxiated, was finally resuscitated by aspiration of the trachea and artificial respiration. The placenta was expressed immediately after the extraction of the child, and little more than the usual amount of blood was lost during the third stage, the contractions of the uterus evidently controlling the hemorrhage from the two incisions in the cervix. A vaginal examination then showed that the incisions on either side reached to (but not beyond) the utero-vaginal junction. No attempt to repair them was made for fear that drainage would be imperfect, or that the irritation of the stitches would act as exciting causes to precipitate further convulsions. As a precautionary measure the uterus and vagina, after irrigation, were packed rather tightly with iodoform gauze.

No convulsions occurred after the termination of labor, although one had taken place in the hour preceding the emptying of the uterus. As far as the local processes were concerned, the puerperium was uneventful.

The patient subsequently developed puerperal mania and was sent to the Insane Asylum on Blackwell's Island, where she remained four months; leaving there in April, she returned to work in her husband's bakery in May, 1894, and has been working steadily ever since and enjoying good health.

It may well be asked what effect upon the puerperium, involution, and the subsequent health of the patient such radical measures of delivery by deep incisions of the parturient cervix will have. Fortunately we were able in this instance to keep the patient under observation and to examine the condition of her cervix and uterus December 5, 1894, or about thirteen months after the operation.

At this time also a drawing was made of the vaginal portion of the woman's cervix by an artist (Fig. 1).



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Upon returning to her work in May, 1894, which consisted in waiting upon customers in her husband's bakery, and in the performance of which she was upon her feet most of the day, this woman experienced some pain in the pelvis and the small of her back. She was at this time treated for several weeks by a physician in Jersey City for subinvolution and "laceration of the womb." It was ascertained that the treatment consisted of the application of iodine and glycerin tampons. This treatment relieved the symptoms and they have not returned. The woman now considers herself in perfect health, and works hard from early in the morning until six in the evening without discomfort of any sort.

On December 5, 1894, the uterus was found to be in good position, freely movable, not sensitive, but rather large. The fact that the woman had, within a few days, passed through a menstrual period may account for the latter condition. She menstruates regularly every four weeks, of the four-day type, without pain or more than the ordinary disturbances, and has no symptoms of renal disease. In this case it could be plainly seen at the examination, as the drawing shows (Fig. 1), that the incisions had extended to but not beyond the cervico-vaginal junction. At this time it was evident also that only partial repair of the incision on the right of the cervix had taken place through about one-third of its length. At the bottom of the sulcus remaining could be seen also an eroded surface of granulation tissue, which bled freely when rubbed with a probe.

The incision on the left side had healed through two-thirds of its entire length, and the bottom of the sulcus on this left side was found smooth and healthy in appearance.

The short cicatrix on the right and the long one on the left, caused by the natural repair of the cuts, could be readily seen and palpated.

CASE II.—G. H., nativity unknown, aged twenty years, I-para, unmarried. For two weeks prior to her admission to the hospital her friends stated that she had been rapidly losing strength, suffering from headache, nausea, vomiting, and gradually became so weak that she was unable to perform ordinary housework, and finally took to her bed. Upon the morning of June 11, 1894,

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the patient was seized with a severe headache, further nausea and vomiting, and later with convulsions. She was then seen by a physician, who administered full doses of morphine; but in spite of this treatment three more convulsions occurred during the day, and she was finally sent by ambulance to the Emergency Hospital, where she arrived at 9.40 P.M. Up to this time five eclamptic seizures had taken place, the last being in the ambulance, for which latter the ambulance surgeon administered chloroform. At the time of her arrival the woman was in coma, and a vaginal examination, although chloroform was still administered, precipitated another convulsion, making the sixth attack in all.[1] At this examination the woman was found to be at or near the middle of the ninth month of gestation; the os uteri just admitted the end of the index finger; no decided uterine contractions could be detected; the supravaginal portion of the cervix had almost disappeared; the head was found presenting in the lower part of the uterus in the L. O. A. position, and the membranes were unruptured. A catheter failed to obtain any urine from the bladder. The pulse was hard, full, rapid, 140 to the minute; the temperature by rectum 105°. The pupils were symmetrically contracted, and the legs and lower thirds of the thighs were œdematous. The fœtal heart, of good quality, was distinctly heard one and a half inches below and to the left of the umbilicus. A simple enema was followed by good results. In spite of the use of chloroform, in the fifteen minutes following the vaginal examination two more convulsions took place, and at 11.35 P.M. still another, thus making four convulsions in the fifty-five minutes following the patient's arrival at the hospital, or nine in all from the first convulsion.

At 11.43, after thorough antiseptic preparation of the vagina and external genitals as for a hysterectomy, and the woman now being fully under chloroform, complete division of the cervix, from the edge of the external os up to the utero-vaginal junction, was made in four directions, antero-posteriorly and laterally, after the method recommended by Dührssen.

A modification of Emmet's angular scissors, curved on the

[1] This case has already been reported before the Society of the Alumni of Bellevue Hospital. See New York Medical Journal, January 12, 1895, p. 55.

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side, were used for the operation, the scissors being grasped in the right hand, and the first and second fingers of the left hand being used as guides, the first without and the second within the lower uterine segment (Fig. 12). These four incisions, which required only a few seconds to make, resulted in full dilatation of the os, the vaginal walls being now continuous with those of the uterus, the barrier of the cervix being removed, four nearly triangular loose flaps only remaining (Figs. 6 and 7).

The left hand, since the vertex had been made out to the left, was then readily passed into the uterus and up to the feet; here the membranes were ruptured, the anterior leg seized, brought into the vagina, and the fœtus extracted. Both arms unfortunately went above the head, and some difficulty was experienced in the delivery of the after-coming head, which was finally accomplished by combined suprapubic pressure, jaw and shoulder traction. The delay in the extraction, as was shown from measurements taken at the autopsy, was due to a moderate flattening of the pelvis, the true conjugate measuring a scant four inches. The child was delivered and the cord clamped at 11.52 P.M., just nine minutes from the time the first incision was made. The child, a male, weighed seven and a quarter pounds, and, although rather deeply asphyxiated, was finally resuscitated, after a quantity of what appeared to be liquor amnii had been aspirated from its trachea by means of a small English catheter. The child, as far as known, is alive to-day. The placenta was expressed and the uterus and vagina irrigated. Sharp hemorrhage followed the incisions, which stopped immediately upon the forearm being introduced into the vagina for the version. No post-partum bleeding, other than the usual lochia, took place. As a precautionary measure the uterus and vagina were rather tightly packed with iodoform gauze. The temperature per rectum, at time of operation, was 105° F., pulse between 140 and 150. The after-treatment consisted of high enemata of castor oil, glycerin, and sulphate of magnesia. Full doses of nitroglycerin were given by needle, and stimulants by mouth and subcutaneously. The skin was made to act by means of dry heat.

Although the woman never fully regained consciousness after her admission to the hospital, still for several hours after the oper-

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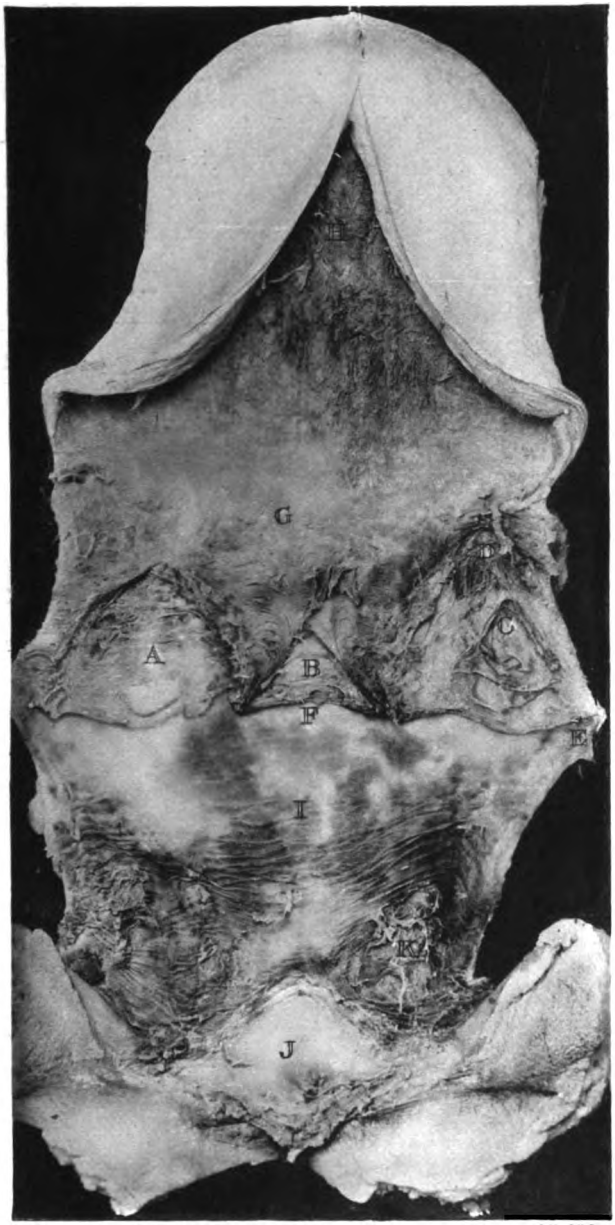


CASE II. (*From a Photograph*).

A, right lateral incision; B, posterior incision; C, termination of left lateral incision, and point where extension by laceration of this incision begins; D, termination of the superficial laceration in the lower uterine segment, caused by extension by tearing of left lateral incision, C. E, anterior incision, apex of which has been cut through in opening the uterus at the autopsy; F, utero-vaginal junction; G, lower uterine segment; H, body of the uterus; I, vagina; J, perineum, lacerated to the second degree; K, superficial laceration of vaginal mucous membrane.

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(From the American Journal of Obstetrics, June, 1895.)

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ation she could be made to swallow small quantities of liquids placed at the back of her tongue. Small quantities of very hot water were thus administered every few minutes, and in this way several pints were swallowed. In addition a pint and a half of a normal saline solution was injected into the back and thighs. During the hour between 3 and 4 A.M. of June 12th the bowels were made to move freely twice as the result of the high enemata. At this time it was reported by the nurse that the patient passed a small quantity of urine, and if this be true it was the only urine secreted in the seventeen hours from the admission of the patient to her death. No urine could be obtained by catheter before or after the operation, and the case may practically be said to be one of total suppression of urine. Two convulsions took place after the emptying of the uterus in this case, the first at 1.45 A.M. of June 12th, and the second at 3 A.M. To limit these chloroform was again used. Oxygen was administered every twenty minutes, and after swallowing became impossible whiskey and hot water were given by rectum.

The lowest temperature recorded was 102° F., and this was at 9 A.M. of June 12th. After this the temperature rose again, and at 3 P.M. death occurred, fifteen hours after delivery and sixteen hours from the time of her admission to the hospital, the patient never having regained consciousness.

Autopsy June 13th, twenty-four hours after death. Body apparently well nourished; œdema of legs and thighs; small quantity of serum in peritoneal cavity; fundus of the uterus on a level with the umbilicus, the right horn being nearest to the anterior abdominal wall. The lungs were congested and œdematous, otherwise nothing abnormal was observed in the heart or lungs. The brain was not examined. In the left broad ligament, commencing at its base and extending up for two inches between its folds, was readily made out a fresh extravasation of blood, rather causing a straining of the tissue than an actual blood-clot. This, as was afterward seen, corresponded to the extension of the incomplete left lateral incision of the cervix upward into the lower uterine segment. Without opening the uterus, the whole genital tract from fundus uteri to perineum was removed. The exact length of the true conjugate, as already stated, was then found to be a scant four inches.

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The parts being laid upon a table, with a pair of blunt scissors an incision was made from the anterior commissure of the ostium vaginæ, along the anterior vaginal and uterine walls, nearly to the fundus of the latter organ. The iodoform-gauze packing was thus brought into view, and was seen to be only moderately soaked with blood; and two small clots were found in the whole length of the genital tract, and these were in the fundus at the placental site, one the size of an English walnut, the other of an almond. The gauze being removed, the incisions in the cervix were brought into view and clearly defined, and within an hour several photographs of the genital tract were secured (see plate).

A few drachms of serum or urine were found in the bladder, but unfortunately were lost before being examined. The kidneys were large, soft, mottled, and smooth. The capsules were non-adherent, and blood flowed freely from the cut surfaces. They were sent to the laboratory for microscopic examination. A report of acute parenchymatous nephritis was returned, and Dr. Henry S. Stearns has kindly photographed one of the sections, which shows the condition very plainly (Fig. 2).

Case III.—Mrs. G., aged twenty-one years; primipara; eighth and a half month of gestation; married one year; Hungarian; housewife; brought to Emergency Hospital by ambulance at 12.45 P.M. on March 10, 1895.

The previous history of the patient, obtained from her family, shows that three months previous to her admission to the hospital, being at that time in her fifth month of gestation, œdema of the feet, ankles, and hands commenced, with at the same time persistent vomiting, the patient being unable to retain any food upon her stomach. During the whole of her pregnancy she was accustomed to drink large quantities of red wine and tea. One month later the œdema extended to her knees and gradually increased, until by the end of the eighth month of gestation the entire body, including the face, was distorted by the swelling. Persistent vomiting continued during all this time, and severe headache was constantly present for the two weeks preceding delivery. In the week previous to admission the headache increased in intensity and was accompanied by dimness of vision, "mists and spots" before the eyes. Swelling of the body increased dur-

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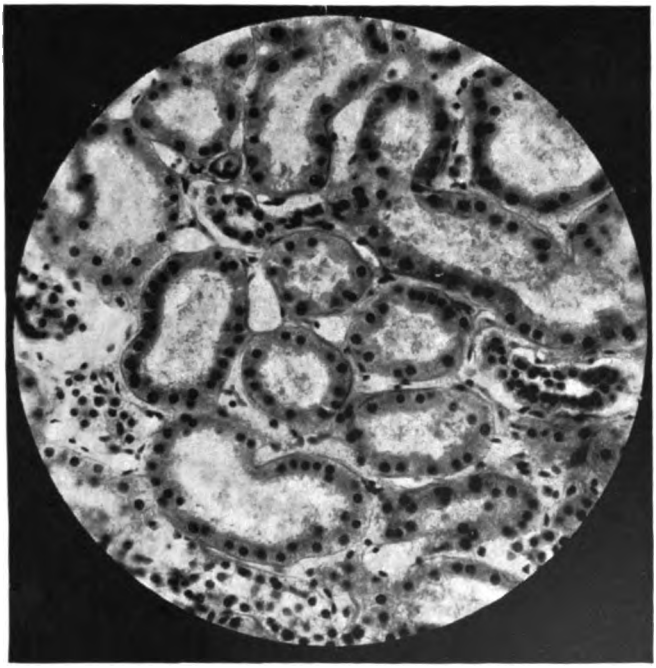
FIG. 2.



**Photograph from section of kidney from Case II. Acute parenchymatous nephritis.**

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ing this time, and the labia protruded as two large boggy masses. One week before admission it was first noticed that the urine diminished in quantity, the woman passing not more than a tablespoonful at a time. It was for this symptom that a physician was first called in, and he caused the woman to be sent by ambulance to Bellevue Hospital. Upon admission at the hospital the patient was found to be in a condition of general anasarca. The pale, waxy skin was drawn tightly over the extremities, body, and face.

Considerable effusion had taken place into the peritoneal cavity, and so much œdema had taken place into the labial and pelvic tissues that the passage of two fingers into the vagina caused a rupture of the boggy perineum, which rupture was further increased in the extraction of the children. The temperature was 99.2°; pulse 130, hard and full; respirations 40, with dyspnœa and signs of moderate pulmonary œdema. The report upon a few drachms of urine drawn by catheter was as follows: Yellow; cloudy; acid; 1040; albumin (urine solidifies); hyalin and granular casts; urea, grms. vii. to the litre. Examination now showed that the fundus uteri reached to a point just above the umbilicus, that the uterine body itself was very broad, that a fœtal heart-sound could be made out in the median line half-way between the pubes and umbilicus. Vaginal examination revealed the fact that the portio vaginalis was still present and of the usual length for a primipara, and, as was subsequently determined, no drawing up of the supravaginal portion of the cervix had taken place; that no dilatation whatever of the os had occurred; that the vagina was apparently longer than usual and markedly narrow, undoubtedly from the presence of œdema. At 1.10 P.M., or twenty-five minutes after admission to the hospital, a convulsion occurred, and at 1.20 a second, and these were followed by post-eclamptic stupor. The second seizure took place in spite of the free use of chloroform.

Immediate delivery was now decided upon, and was, after the usual scrubbing and cleansing of the vagina and vulva, performed in the following manner, the hospital staff recording the steps in the operation:

Chloroform was used for anæsthesia. Dilatation of the os was

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begun by means of an Ellinger-Goodell dilator at 2 P.M. This was practised for a few minutes, or until the os would admit two fingers. Manual dilatation was then kept up until 2.20 P.M.; at this time the supravaginal portion of the cervix had been made to partially disappear, and although the edge of the internal os could still distinctly be felt, still, in view of the condition of the woman, four deep incisions of the cervix were made, antero-posterior and lateral, reaching as far as the utero-vaginal junction. Moderate hemorrhage followed the cuts. A breech was then found presenting in the L. S. P. position at the inlet. The anterior leg was brought down, and the first twin, a male, weighing five and a quarter pounds, was extracted at 2.24 P.M. The second twin was then found presenting in the R. O. A. position. The right arm was introduced, the anterior leg seized, podalic version performed, and the second twin, a male, weighing four and three-quarter pounds, was extracted at 2.28 P.M. As there was now considerable bleeding, the placenta was immediately expressed, and the utero-vaginal canal tamponed with iodoform gauze, partly to control the hemorrhage, but more to secure good drainage through the incised cervix. A uterine douche preceded the introduction of the gauze, which latter was removed in seventy-two hours and the uterus again irrigated.

The following is a *résumé* of the steps of the operation as recorded by the members of the hospital staff present:

| | |
|---|---|
| Instrumental dilatation begun at | 2.00 P.M. |
| Manual dilatation begun at | 2.05 " |
| Incisions in cervix made at | 2 20 " |
| First twin (breech, 5¼ lbs.) extracted at | 2.24 " |
| Second twin (vertex, 4¾ lbs.) extracted at | 2.28 " |
| Placenta (expression) delivered at | 2.29 " |
| Duration of first stage | 20 minutes. |
| Duration of second stage | 8 " |
| Duration of third stage | 1 " |
| Total duration of labor | 29 minutes. |

In this case two convulsions occurred in the puerperium, the first precipitated by the use of the catheter at 8.40 P.M., and the second at 11 P.M. of the day of operation; the first about six and the second about nine hours after delivery. For these chloroform

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was administered, and chloral hydrate and bromide of soda given in starch enema by rectum. Subsequently, although some muscular twitchings were noted, no further eclamptic seizures took place. Otherwise the woman passed through a smooth puerperium (see Fig. 3). The general after-treatment consisted in dry cups followed by digitalis poultices over the kidneys; compound jalap powder followed by high enemata of the sulphate of

FIG. 3.

| Date. | March 10 | | March 11 | | March 12 | | March 13 | | March 14 | | March 15 | | March 16 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Day of Puerperium. | LABOR DAY. | | FIRST. | | SECOND. | | THIRD. | | FOURTH. | | FIFTH. | | SIXTH. | |
| Hour | A.M. | P.M. | A.M. | P.M. | A.M. | P.M. | A.M. | P.M. | A.M. | P.M. | A.M. | P.M. | A.M. | P.M. |
| 100 | | | | | | | | | | | | 100 | | |
| 99 | | | | | | 99 | | | | | | | | |
| 98 | | | | | | | | | | | | 98 | | |
| 97 | | | | | | 97 | | | | | | | | |
| 96 | | | | | | | | | | | | 96 | | |
| Pulse. | | 130 | 100 | 88 | 80 | 84 | 88 | 88 | 92 | 88 | 88 | 92 | 92 | 88 |
| Resp. | | 40 | 40 | 28 | 32 | 30 | 28 | 26 | 28 | 30 | 28 | 26 | 26 | 26 |
| Amt. Urine. | ℥ii Catheter | ℥iii Catheter | ℥xviii ℥i Catheter | | ℥lxii Catheter | | ℥xcviii Catheter | | ℥cxl.iiss Catheter | | ℥cclxxvii | | ℥clxx | |
| No. Stools. | 2 | | 5 | | 13 | | 12 | | 7 | | 6 | | 4 | |

Case III.—Record of first seven days of puerperium.

magnesia; the prolonged use of the hot-air bath, two and three hours at a time, and frequent administration (every two hours) of glonoin by needle. The latter failing to reduce the high arterial tension in the first eight hours following delivery, veratrum viride in five-minim doses by needle was added with good result. For the first five days the urine was drawn by catheter after the patient had been placed under chloroform, as the first attempt to draw the urine without the use of chloroform precipitated the first convulsion above recorded. A milk diet was adhered to for the twenty-five days of the puerperium; small and frequently repeated doses of bitartrate of potash were admin-

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istered for the first two weeks, and during the whole time the patient was encouraged to drink large quantities of Bethesda water; tincture of the chloride of iron was commenced early in the treatment and continued throughout.

Under the above treatment the general anasarca rapidly disappeared, so that full-length photographs taken of the patient upon the second and eighth days of the puerperium are scarcely to be recognized as representing the same individual.

Upon the nineteenth day of the puerperium the perineum was repaired, chloroform being used. A good result was obtained. The children upon delivery were immediately wrapped in warm flannel and placed in a couveuse. Two wet-nurses were obtained for them from among the puerperal women of the hospital, and they were put to the breast soon after birth. In addition they each received a daily inunction of cod-liver oil until their discharge upon the twenty-fifth day.

I am most grateful to Dr. F. F. Russell, of the Fourth Medical Division of Bellevue Hospital, for his care in carrying out the details of the after-treatment of this case.

This patient, after her return to her home, has been kept under observation in order to note the effect of the deep incisions upon the cervix and involution of the uterus.

An examination made May 8, 1895, or eight weeks after the operation, shows the uterus to be freely movable, in excellent position, and its cavity to be three inches in length.

Almost complete repair of the anterior and posterior incisions has taken place, but only partial repair of the two lateral ones. The right lateral incision has closed for about a half of its extent, and the left lateral for about one-third. No eroded surfaces are to be seen. It can be plainly seen that the left lateral incision had extended by tearing beyond the cervico-vaginal junction on to the lateral vaginal wall, as the cicatrix, an inch in length, can be plainly seen. (Fig. 4, A.)

No stronger proof of the danger of making these incisions before complete disappearance of the vaginal and supravaginal cervix can be offered than this extension of the left lateral incision. We were tempted to incise in this case, as already stated, before the cervix was in proper condition for the operation,

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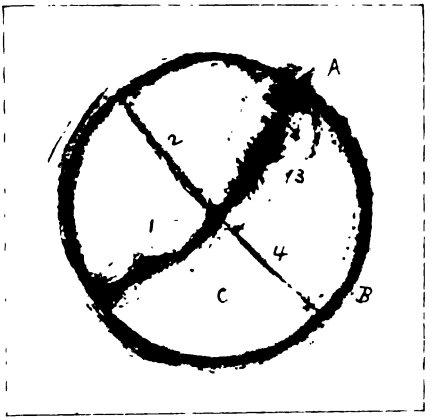
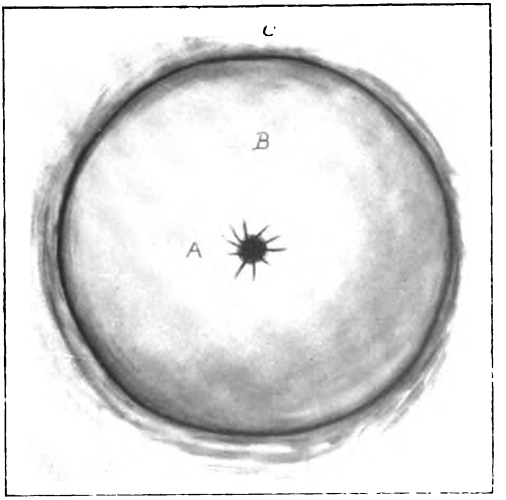
FIG. 4.




Condition of cervix in Case III. two months after operation. Partial repair of lateral incisions; almost complete union in anterior and posterior ones. Rotation of the uterus causes oblique position of the incisions. 1, 3, lateral incisions; 2, 4, anterior and posterior incisions; C, body of cervix; B, cervico-vaginal junction; A, extension of left lateral incision along left vaginal wall by tearing.

FIG. 5.




Superficial multiple incisions of cervix. A, external os with multiple incisions radiating about it; B, cervix; C, utero-vaginal junction.

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because of the desperate condition of the patient, and, as a result, one incision extended by tearing so as to involve the lateral vaginal wall.

The same extension by tearing took place in Case II., in which, as already noted, one incision was not carried fully up to the utero-vaginal junction (see plate, C–D).

The woman's general condition at this time is excellent. The kidneys are apparently doing their work satisfactorily, no œdema is to be seen, and the albumin and casts have disappeared from the urine. She has an abundant milk-supply, and is nursing her twins, who appear to be fully nourished.

It is not for the purpose of recommending or defending a radical surgical procedure that these three cases of eclampsia, delivered by means of deep incisions, are brought to the attention of the American Gynecological Society. In Case I. the condition of the genital organs one year after operation, in Case II. the genital tract itself with the results of the autopsy, and in Case III. the condition of the genital organs two months after operation and delivery, are presented for the purpose of calling forth a fair criticism. In the three cases cited the situation was desperate in the extreme, and in view of this fact we made use of a procedure in each which appeared to offer the best, if not the only, hope of recovery. In Case I. the prognosis was rendered unfavorable because the attack occurred during pregnancy, at the eighth month; the woman was a primipara; no dilatation of the os had taken place; the supravaginal portion of the cervix had not disappeared; the child remained alive during the frequent and severe eclamptic attacks, eight taking place before delivery; there was coma at intervals; the urine was scanty, with large proportion of albumin. The uterus was emptied in this instance by a surgical procedure within half an hour of the last convulsion; no further attack occurred, and both mother and child were saved. Manual dilatation of this cervix and extraction of the fœtus would have taken at least an hour and a half, and so a good hour was saved by incising the cervix. It must be remem-

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## ANALYSIS OF THREE CASES OF DEEP INCISION OF THE PARTURIENT CERVIX.

| No. of case. | Date of operation. | Age. Para. Month of gestation. | Place of operation. | No. of convulsions before operation. | No. of convulsions after operation. | Condition at time of operation. | Anæsthetic. | Presentation. Position. | Os uteri. | Vaginal portion of cervix. | Supravaginal portion of cervix. | No. of incisions in cervix. | Duration of first stage. | Duration of second stage. | Total duration of first and second stages. | Method of delivery. | Sex and weight of child. | Result for woman. | Result for child. | Remarks. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Nov. 22, 1893 | 22; i-para; 8 mos. | Emergency Hosp. | 8 | 0 | Post-eclamptic stupor. | Chloroform. | Vertex | Admits index finger | Shortened. | Partially drawn up. | 2 lateral. | 20 min. Manu'l dilatation and incision. | ..... | ..... | Direct podalic version. | Male. | Recov'ry | Living | Woman in excellent health thirteen months after operation. Partial natural repair of incisions. |
| 2 | June 11, 1894 | 20; i-para; 8½ mos. | Emergency Hosp. | 9 | 2 | Coma; total suppression of urine. | Chloroform. | Vertex L.O.A. | Admits tip of index finger | Absent. | Absent. | 4 | 1 min. Incision only. | 8 min. | 9 min. | Direct podalic version. | Male, 7½ lbs | Death 15 hrs. after operation. | Living. | Autopsy: Acute parenchymatous nephritis. |
| 3 | Mar. 10, 1895 | 21; i-para; 8½ mos | Emergency Hosp. | 2 | 2 | Post-eclamptic stupor. | Chloroform. | I. Breech L.S.P. II. Vertex R.O.A. | Closed | Usual l'ngth | Present. | 4 | 20 min. Instrumental manual dilatation and incision. | 8 min. | 28 " | I. Br'ch extraction. II. Direct podalic version. | I. Male, 5¼ lbs II. Male, 4¾ lbs | Recov'ry | I. Living. II. Living. | Smooth puerperium. Woman in excellent health two mos. after operation. Twins living. Partial natural repair of incisions. |

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bered that the average number of convulsions in fatal cases is in the neighborhood of ten, and this patient had already experienced eight when operated upon. In Case II. the prognosis was bad because the attack took place during pregnancy, at the eighth and a half month; the woman was a primipara; the os only admitted the tip of the index finger; the child remained alive during the convulsions; the large number of convulsions when seen—namely, nine; the profound coma, the temperature of 105°, the pulse of 140, and the total suppression of urine. By emptying the uterus in nine minutes by deep incisions of the cervix the child was saved, and its condition of deep asphyxia indicated that it could not have survived many more minutes within the uterus; the woman was given a fighting chance for her life, and the autopsy shows that the operation, which lasted only a few minutes, and which was not attended by serious hemorrhage, could scarcely have affected the prognosis unfavorably. In Case III. the prognosis was also unfavorable, since the eclamptic attack first appeared at the eighth and a half month of pregnancy; the woman was a primipara; no dilatation of the os had taken place; the vaginal and supravaginal portions of the cervix were still present; the pregnancy was a twin one, and both children lived; two eclamptic attacks took place in the hour preceding delivery, in spite of the use of chloroform; the presence of general anasarca and commencing pulmonary edema; the scanty urine and evidently grave kidney lesion. An expectant treatment, or one that emptied the uterus less rapidly in these three cases, would probably have resulted in the loss of all four children, and possibly of all three mothers. As it stands, six out of the seven lives concerned were saved.

Skutsch, as late as 1887, recommended superficial multiple incisions of the cervix uteri during labor to rapidly terminate delivery (Fig. 5). His results, however, were so disastrous as to induce him to abandon the operation. He operated in only a few cases. In one of his cases the original incisions tore so as to require suture after delivery. In another a superficial

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incision in the edge of the cervix extended so deeply by tearing that it was necessary to ligate the uterine artery in order to control the hemorrhage. Although Skutsch then proposed deep incisions of the cervix, it was Dührssen who first performed the operation. Dührssen claims in this operation, which now bears his name, that when incisions are made in four directions, commencing at the edge of the external os and extending completely through the cervical portion fully to the utero-vaginal junction, the original incisions will extend no farther, as they do in the incomplete method, and that when the incisions are properly made the os is found to be fully dilated and no obstacle at this point remains to delivery, and upon delivery of the fœtus past this point the now fully dilated os is subjected to no dangerous stretching (Figs. 6 and 7).

The cases just reported bear out this statement. In Case I., in which, as the illustration shows, the incisions were made completely up to the utero-vaginal junction, no extensions by tearing occurred (Fig. 1). In Case II., in which the left lateral incision fell short of complete division of the vaginal portion, extension by tearing resulted in the subsequent extraction, which, although it caused no complication, still, with a larger child or a narrower pelvis, might have opened a branch of the uterine artery (see Plate, C–D).

THE OPERATION. It cannot be too strongly insisted upon that, as far as our present knowledge goes, the operation should only be undertaken when the entire supravaginal portion of the cervix is fully dilated; in other words, when the defective dilatation is confined to the vaginal portion of the cervix. Under such circumstances the vaginal portion of the cervix represents the more or less thick and broad border of the external os (Fig. 8, E.O.) which springs round about from the upper vaginal walls (Fig. 8, U.V.J.). In exceptional instances, this border of the external os shows a small projection which is the remaining unobliterated part of the vaginal portion (Fig. 9, V.C.).

The above mode of dilatation is to be found, as a rule, in

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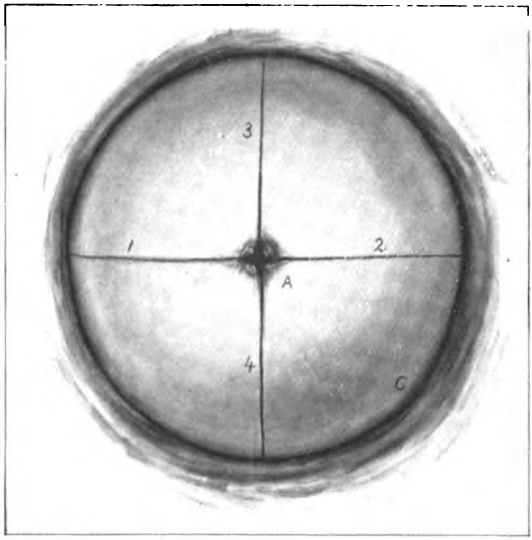
FIG. 6.




Deep incisions in the cervix, extending from the border of the external os to the utero-vaginal junction. A, external os; C, utero-vaginal junction; 1, 2, 3, 4, lateral and antero-posterior incisions.

FIG. 7.

Effect of the four incisions upon dilatation.

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primiparæ (Fig. 9); in multiparæ before the os is well dilated the narrowest portion of the os is often to be found above the cervico-vaginal attachment (Fig. 10, I.O.). In either primiparæ or multiparæ, when one examines a given case, say in the last week or ten days of gestation—namely, in the period which some are pleased to term the preparatory stage of labor —changes in the lower uterine segment and the supravaginal portion of the cervix have often proceeded so far as to result

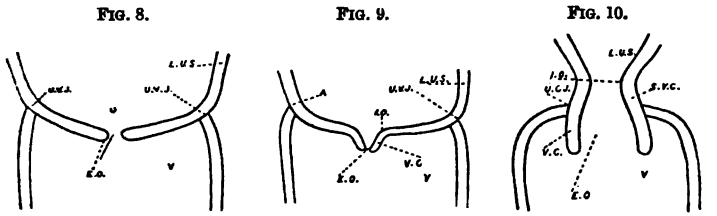


FIG. 8.—Defective dilatation confined to the vaginal portion of cervix only. Entire supravaginal portion of cervix is fully dilated. V., vagina; E.O., external os; U.V.J., utero-vaginal junction; L.U.S., lower uterine segment.

FIG. 9.—Mode of dilatation in primiparæ. Narrowest portion of os below the vaginal attachment. V., vagina; E.O., external os; V.C., vaginal portion of cervix; I.O., internal os; U.V.J., utero-vaginal junction; L.U.S., lower uterine segment.

FIG. 10.—Mode of dilatation in multiparæ. Narrowest portion of os above the vaginal attachment. V., vagina; E.O., external os; V.C., vaginal portion of cervix; I.O., internal os; U.C.J., utero-cervical junction; S.V.C., supravaginal cervix L.U.S., lower uterine segment.

in complete obliteration of the latter structure, and thus render the conditions suitable for this operation. The same is also true of an earlier period of pregnancy in exceptional cases (Fig. 11, E.O.).

When during pregnancy or labor the supravaginal portion of the cervix has disappeared (been drawn up into the body of the uterus), or can be made to disappear by appropriate mechanical means, and grave danger threatens mother or child, complete dilatation can be secured in a few minutes by means of from two to six deep incisions, radiating from the os to the uterovaginal junction, and the uterus emptied in a few minutes by appropriate means.

In cases of multiparæ where the supravaginal portion of

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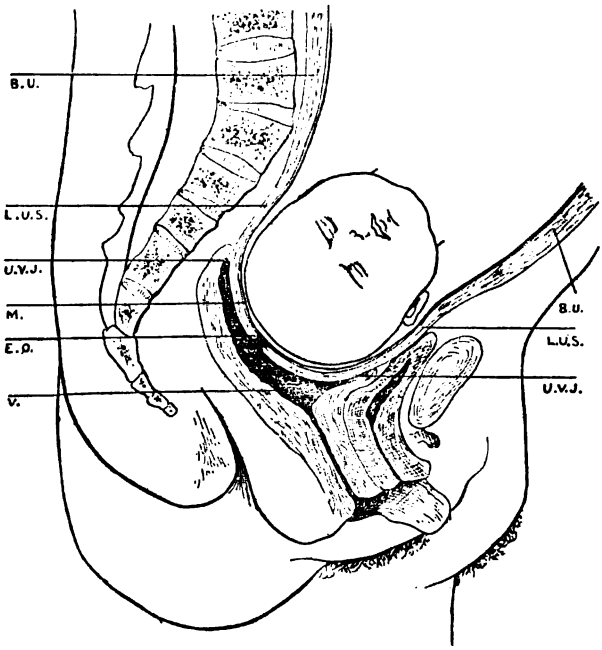
the cervix is still present (Fig. 10, S.V.C.), the mechanical dilatation of the cervix is to be preferred to the bloody dilatation by means of deep incisions. Moreover, in multiparæ the mechanical dilatation will usually suffice. In the presence of immediate danger, however, the supravaginal portion still being present, the two procedures can be combined to advan-

FIG. 11.




Condition of cervix often found in both primiparæ and multiparæ during the last days of gestation. Entire supravaginal portion of cervix fully dilated. Compare Fig. 8. V., vagina; E.O., external os; U.V.J., utero-vaginal junction; M., amnion; L.U.S., lower uterine segment; B.U., body of the uterus.

tage—namely, mechanical dilatation until the internal os has been made to disappear (Figs. 13–16), and the dilatation then completed in an instant by the deep incisions (Figs. 6 and 7). Dührssen cites the case of a primipara with the supravaginal portion still present in whom he carried out this combined

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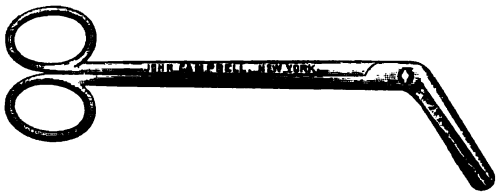
method. The same procedure was carried out in the first and third of the cases here reported. By this combined method we can accomplish an immediate delivery by the natural passages, without danger to mother or child even when the cervix is present and rigid. The method has this advantage over the old "accouchement forcé"—namely, that the obstruction formed by the barrier of the cervix is entirely removed before the extraction of the fœtus is undertaken, and the fœtus is not made to act as a dilator.

To make the incisions, usually four in number, the free edge of the os is fixed between the first three fingers or two bullet forceps, and the incisions made with long, straight or angular scissors or a bistoury, care being taken to bring them fully up to the utero-vaginal junction (Figs. 12, 6, and 7).

FIG. 12.



Blunt angular scissors.

MECHANISM OF DILATATION. In order to render the changes that take place in the parturient cervix during the several stages of dilatation mere readily understood, we have introduced seven illustrations showing the condition of the cervix from the outset of labor to complete dilatation of the os (Figs. 13 to 19).

SURGICAL ANATOMY. A glance at the surgical anatomy of deep cervical incisions of the pregnant and parturient cervix naturally leads us to inquire what risk we run in wounding the structures immediately adjacent to the cervico-vaginal junction, as the uterine artery and its branches, the ureter, the bladder, and peritoneum. Of these structures the



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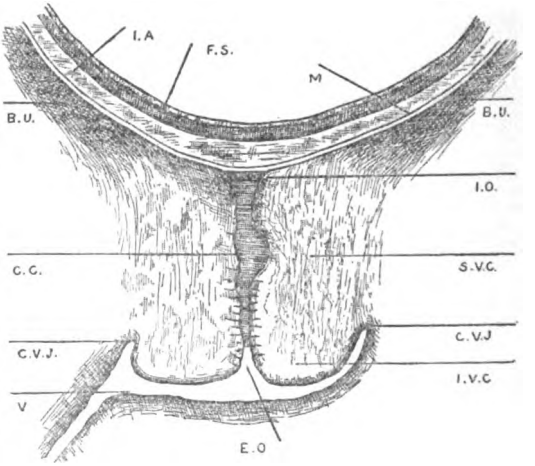
three last are in least danger of being injured, and, in fact, we are scarcely able to do them any harm if we limit our incisions strictly by the utero-vaginal junction. Yet incisions carelessly made, that, for instance, include a fold of the vagina with the thin layer of the vaginal cervix, may readily, in the case of the posterior incision, open into Douglas's pouch, and in that of the anterior into the utero-vesical pouch or the bladder itself. This is the more important, as well as inter-

FIG. 13.




Cervix in latter part of gestation or at beginning of labor. Vaginal and supravaginal portions of cervix unchanged. V., vagina; E.O., external os; I.V.C., infravaginal portion of cervix; C.V.J., cervico-vaginal junction; C.C., cervical canal; S.V.C., supravaginal portion of cervix; I.O., internal os; M., membranes; I.A., liquor amnii; B.U., body of uterus; F.S., section of fœtal skull. (LEPAGE.)

esting, since the autopsy in Case II. showed that the dip of the peritoneal fold forming the Pouch of Douglas extended down between the anterior rectal and posterior vaginal walls, so as to cover fully two inches of the upper portion of the latter surface. In fact, the specimen plainly shows that very little tissue intervenes between the apex of the posterior incision and the free peritoneal cavity, merely the thickness of the posterior vaginal wall at this point. One can here readily

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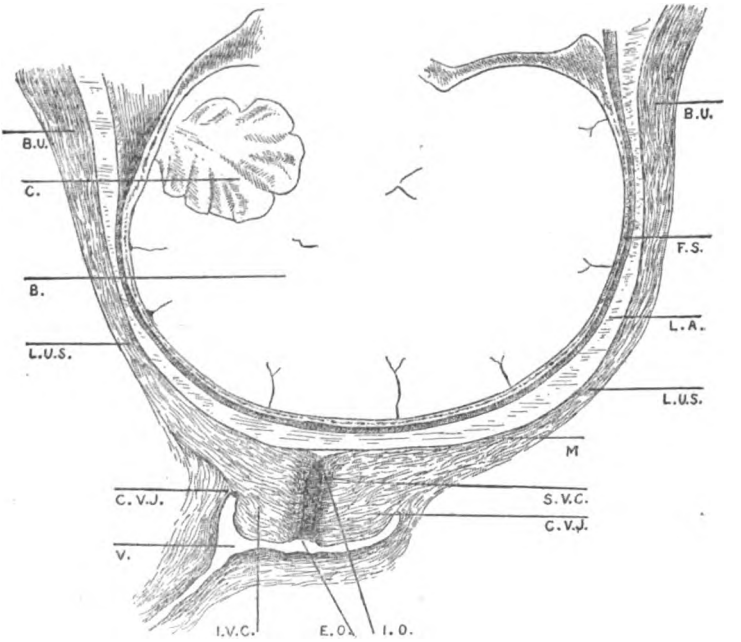
appreciate how a too free incision, or the including of a vaginal fold, as above stated, would open into the Pouch of Douglas. The low dip of the posterior peritoneal pouch in this case would make the pouch as low as in the nullipara, or even lower, and is in accord with the more recent researches

FIG. 14.




Lower uterine segment during labor. Cervix in progress of being drawn up into the body of the uterus. Supra and infravaginal portions of the cervix still present. V., vagina.; E.O., external os; I.V.C., infravaginal portion of cervix; C.V.J., cervico-vaginal junction: S.V.C., supravaginal portion of cervix; I.O., internal os; M., membranes; L.U.S., lower uterine segment: L.A., liquor amnii; B.U., body of the uterus; F.S., fœtal skull. (LEPAGE.)

in pelvic anatomy. The same mistake in the instance of the lateral incisions may open a ureter, as the latter passes forward and inward in close relationship with the antero-lateral vaginal wall to enter the bladder about an inch below and in front of the cervico-vaginal junction. The uterine artery or

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its main branches can only be opened by cutting too deeply beyond the utero-vaginal junction into the lower uterine segment, or by subsequent extension of the incisions by tearing during operative procedures or extraction of the fœtus.

A study of the incisions in Case II. (see plate, E.B.A.) shows us that not even the slightest extension of the incisions by tearing resulted in the anterior and posterior and right lateral, but the specimen and photographs plainly indicate that the left lateral cut extended by tearing to the extent of about half an inch beyond the utero-vaginal junction (plate, C.D.); and it will be remembered that the child in this case weighed seven and a quarter pounds and that the pelvis was slightly flattened. In the specimen the point where the left lateral incision ends (C) and the tract of the further extension of the cut by tearing along the left wall of the lower segment are plainly indicated (see plate, C.D.). Although this laceration is shallow and superficial, only involving the inner fibres of the uterine muscular wall, and does not open into the space between the two folds of the broad ligaments, although it extends parallel to and directly opposite the lower portion of these two folds, still we look upon its occurrence as a danger signal, and we have attempted an inquiry into its causation.

If Dührssen's statement is true—namely, that when the incisions are complete and extend fully up to the utero-vaginal junction full dilatation of the os is produced, and no further extension by tearing beyond the attachment of the vagina will occur—then it would appear at first sight that we have in the instance of the extension of this left lateral incision a contradiction of the above statement. We can, we believe, show that no such contradiction exists.

At the autopsy in Case II. careful measurements of the incisions were made with a pair of drawing compasses, and with the following result:

| | | |
|---|---|---|
| Length of | anterior incision . . . . . | 1⅛ inches |
| " | posterior incision . . . . . | 1⅛ " |
| " | right lateral incision . . . . | 1⅞ " |
| " | left lateral incision (to laceration) . | 1⅜ " |
| " | left lateral incision and laceration . | 2½ " |

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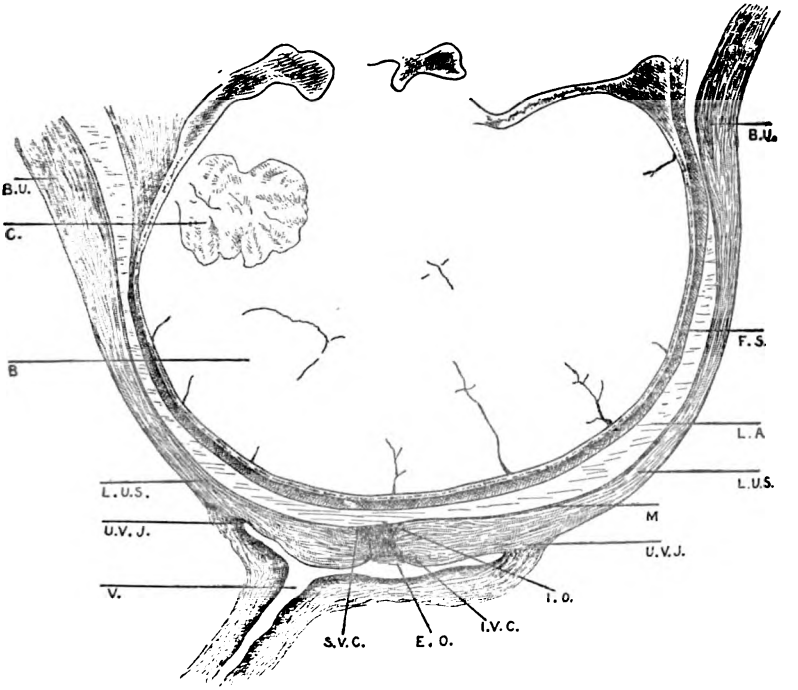
These figures cannot be looked upon as representing the actual length of the incisions in the parturient cervix, since they were taken from the puerperal uterus twenty-four hours after death and forty from the operation, after the usual contraction and retraction of the uterus had occurred. Still they

FIG. 15.




Lower uterine segment during labor. Supra and infravaginal portions of the cervix nearly effaced. V., vagina; E.O., external os; I.V.C., infravaginal portion of cervix; S.V.C., supravaginal portion of cervix; I.O., internal os; U.V.J., utero-vaginal junction; M., membranes; L.U.S., lower uterine segment; L.A., liquor amnii; F.S., fœtal skull; B.U., body of the uterus. (LEPAGE.)

are of some relative value, in that they point to the fact that this left lateral incision fell short by five-eighths of an inch of the length of its fellow upon the opposite side of the os, and hence failed to that extent, perhaps, to reach the vaginal junc-

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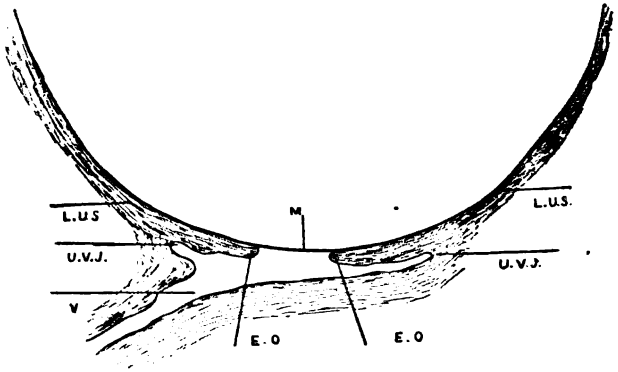
tion. This might, of course, prove a mere coincidence were it not for the fact that we, at the time of operation, expressed some doubt as to the cervix being fully divided on the left side, because of the difficulty in handling the angular scissors at this point. We look upon this laceration as the result of a partially divided cervix, and hence extension by tearing took place to the extent of an inch and a quarter. Had, on the other hand, the incision at this point been complete, as in the anterior, posterior, and right lateral, we firmly believe stretching without tearing of the ring of the external os would have occurred during the extraction of the fœtus. The fact

FIG. 16.




Lower part of the uterus during labor. Os uteri in progress of dilatation. Supra- and infravaginal portions of the cervix have disappeared. V., vagina; E.O., border of external os; U.V.J., utero-vaginal junction; L.U.S., lower uterine segment. (LEPAGE.)

that both arms went above the head in the extraction of the fœtus, and were swept over the face at this point—the vertex of the after-coming head being directly to the right—and, moreover, that the pelvis was moderately flattened (conjugata vera four inches), may also have favored the tendency to laceration.

IMMEDIATE REPAIR OF THE INCISIONS. It is not necessary or advisable to suture the incisions after the operation. Spontaneous union of the cervical incisions usually occurs.

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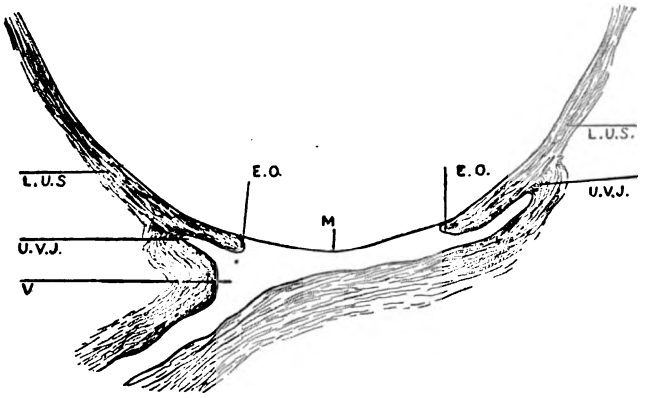
Dührssen claims union in most of his cases. Partial union took place in Cases I. and III. (Figs. 1 and 4). Moreover, the suture prolongs the operation and gives a possible source of local irritation to cause further convulsions where the procedure is used in eclampsia. Dührssen states that the ultimate results of the operation are satisfactory. He found in some of his cases the incisions in the cervix did not always heal and that ectropia formed. He says, however, his patients suffered no inconvenience. He knows of two who have since

FIG. 17.




Lower part of the uterus during labor. Os uteri in progress of dilatation. V., vagina; U.V.J., utero-vaginal junction; E.O., border of external os; M., membranes; L.U.S., lower uterine segment. (LEPAGE.)

become pregnant and borne children spontaneously and easily. His observation leads him to believe that the changes in the vaginal portion of the cervix subsequent to the deep incisions are the same as those noticed after ordinary labor with deep lacerations of the cervix.

Our study of Cases I. and III. bears out this statement.

HEMORRHAGE. The profuse hemorrhages formerly observed in cervical incisions were due to the fact that they were made superficially by a timid operator, and so the extraction of the fœtus through the imperfectly dilated os caused the inci-

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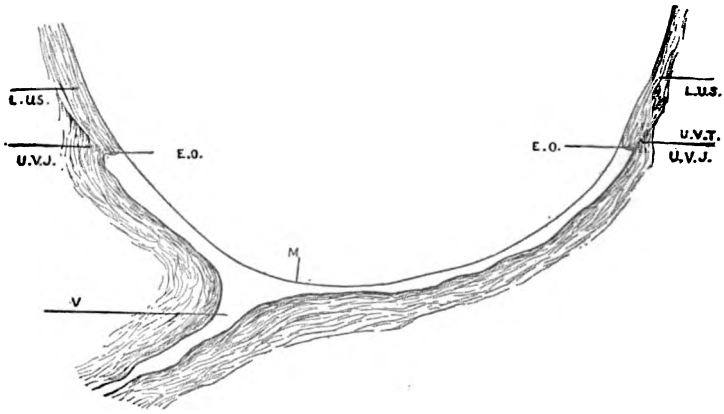
sions to extend by tearing beyond the attachment of the vagina. It has been shown by those who have practised this operation that the procedure is not associated with considerable hemorrhage, and therefore, on this account, the incisions need not be stitched subsequently. None of Dührssen's cases required sutures to control hemorrhage. As a precautionary measure in all of our cases, an iodoform-gauze tamponade was inserted into the genital tract. The autopsy in one, and the study of the other cases, demonstrate that the contractions of the uterus

FIG. 18.




Lower part of the uterus during labor. Os uteri almost fully dilated. V., vagina; M., membranes; E.O., border of external os; U.V.J., utero-vaginal junction; L.U.S., lower uterine segment. (LEPAGE.)

are fully able to control all hemorrhage. In Dührssen's thirty-five cases hemorrhage never occurred where the uterus was well contracted. In the cervix, after the supravaginal portion has disappeared, been drawn up, there are no large vessels, therefore sutures, except to assist union, are not required.

SEPTIC INFECTION. Primary septic infection of the deep incisions, which would formerly have been justly feared, can to-day be avoided by strict surgical cleanliness (see temperature chart, Fig. 3).

Secondary infection with decomposed uterine secretions can,

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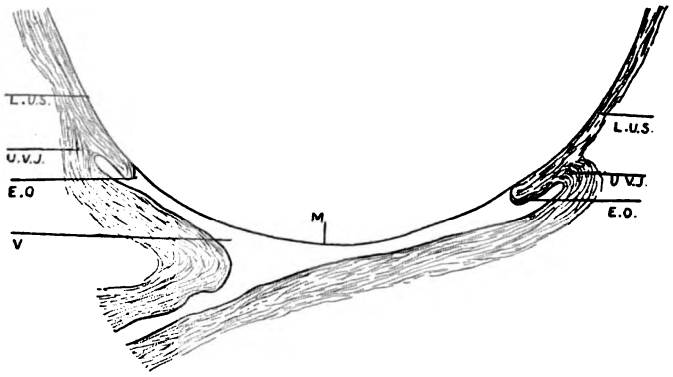
of course, occur, but this danger can be greatly lessened by thorough antiseptic irrigation of the uterine cavity after labor, and securing free drainage through the os uteri by means of the utero-vaginal gauze drain.

On the other hand, if in a given emergency rapid emptying of the uterus during labor at or near full term, through an os that is imperfectly dilated, is performed, lacerations almost certainly result that are usually deeper and more extensive than the two, four, or six clean and sharp-edged incisions

FIG. 19.




Lower part of the uterus during labor. Os uteri completely dilated. V., vagina; M., membranes; E.O., external os; U.V.J., utero-vaginal junction; L.U.S., lower uterine segment. (LEPAGE.)

proposed in this operation. Moreover, in the former instance deeper and more numerous vessels and lymphatics are opened into, and so the danger of primary and secondary septic infection is correspondingly increased, to say nothing of hemorrhage.

In conclusion, we believe that the field for this operation will prove limited; that the operation itself is a serious one and not to be undertaken lightly.

The operation is still comparatively new, and not enough cases have been as yet reported and carefully studied to enable

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us to draw any definite conclusions as regards the ultimate value and real dangers of these incisions.

We can foresee that much harm will result if the procedure is carried out in the absence of strict surgical cleanliness and without the operator first making himself thoroughly familiar with the mechanism of dilatation and the surgical anatomy of the parturient cervix.

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# TRACHOMA OF THE FEMALE GENITO-URINARY TRACT.

By Arthur W. Johnstone, M.D.,
*Cincinnati.*

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Scattered through the literature of gynecology you will find slight reference to such terms as granular vaginitis, kraurosis vulvæ, vascular degeneration of the vulva, and a great deal on the subject of vaginismus. My belief is that the majority of cases thus classified are nothing more than the varying forms and conditions of trachoma. During six months that I spent in Birmingham I saw quite a number, at least half a dozen cases, of so-called vascular degeneration of the vagina and vulva. You all understand that it is a very chronic trouble, and results finally in the formation of cicatricial tissue, which gives in some cases the most terrific deformities, and goes on even to the blocking and closure of the whole passage in a few of the most extreme cases. These cases I watched with the greatest interest. One or two I traced up for fully six months. But I found, after careful study, that it was dealing rather with the results of the disease than with the disease itself; I never got the true idea of what the character of the disease is until about two years ago. You all know that I came into this specialty from the eye. My former experience has made me thoroughly familiar with trachoma of the eye. Since I got the clue, two years ago, I have been searching for the disease carefully, and within two years I have found no less than six cases. The appearance of the vagina and vulva is exactly that of an acute trachomatous

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inflammation of the eyelid, extending all over them, beginning with the clitoris, running down from the apex of the triangle, around the urethra, spreading out on the nymphæ, dipping back into every fold and crypt until it reaches the urethra, running up into the canal a greater or less distance, then, turning on down through the nymphæ and the carunculæ myrtiformes, it finally disappears some distance up the vagina, making the fourchette one of its last strongholds. The first thing that will strike you about it is its deep crimson color. The next most striking point is the thinness of the discharge which comes from it. It is never a creamy pus, unless the patient has recently taken cold, but a thin, ichorous, watery discharge. Every papilla is enlarged so as to give the mucous surface a sago-grain appearance, and down between each papilla you are very apt to find little fissures, which have cracked clear through the mucous membrane, and these are found particularly in the fourchette and between the carunculæ myrtiformes, and occasionally just in the edge of the urethra. These fissures are nearly always bathed in a thin, watery, serous fluid. The two foci at which the inflammation seems to be most intense are the urethra and the carunculæ myrtiformes, or the hymen, if it still persists. These patients are the greatest sufferers whom I know. Not only do they have the most exquisite pain on the slightest touch, but the whole nervous system later gets completely upset by it. Another peculiarity about it is that in the acute stages, just as in the acute inflammatory stages of ocular trachoma, a very slight touch is all that is necessary to produce bleeding. The epithelium is gone in these little crevices of which I have spoken, and sometimes the crests of the papillæ themselves are denuded and the whole tissue infiltrated and swollen. The cases are always of long standing. I mean by that several years. Those of you who are familiar with trachoma in the eye will be struck at once with the similarity in the course of it in the eye and in the female passages. Of course, the histories of the two are identical.

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This inflammation, if let alone, runs on to the formation of new connective tissue, and it is this early stage which has gotten for it the name of granular vaginitis. Unfortunately, the term granular vaginitis embraces two distinct diseases. In my experience a few of these cases are due to trachoma, but the bulk of them are of gonorrhœal origin; but the gonorrhœal is easily differentiated from the trachomatous, first by the clinical history, and second by the different appearance. In the gonorrhœal you have a swollen condition of the whole membrane, and it is pouring out large quantities of mucopurulent matter, whereas the secretion in trachoma, as I have already said, is a thin, watery, irritating affair. The gonorrhœal inflammation runs its course in a comparatively short time—that is, its cycle is measured by months, whereas the trachomatous one, left to itself, can be measured only by years. The gonorrhœal does not have acute exacerbations so often. Taking cold, exposure, general upsets of one kind and another, do not aggravate the gonorrhœal like they do the trachomatous form. This is about the only disease with which trachoma is likely to be complicated. But if you remember those two symptoms, the length of time and the differences in the appearance of the diseases, there ought to be no difficulty in differentiating the two. One other symptom, and that is the trachomatous conditions rarely ever begin about the cervix, but from the increased redness you will see that they commence near the urethra or the carunculæ myrtiformes, and gradually shade off as they go from these. But I have seen one case in which the inflammation spread clear up to the cervix, but the cervix itself was not the most intense point of inflammation. In simple vaginitis due to irritations from the products of chronic metritis, the cervix itself is always the most intense point of inflammation, and you can trace directly the course of the irritant fluid by the shadings of the vagina. So much then for the early stages of this disease.

After the disease once gets thoroughly established these

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mucous fissures are formed and a constant source of chronic irritation is set up, new connective tissue begins to form, and there results the irritable state of the nerves which exists in fissure of the anus or fissure anywhere else, and as the result of it we have the spasm of the muscle, so that there is that extreme irritability just as in trachoma of the eye, and we have a vaginismus which is exactly the same thing as the blepharospasm of ocular trachoma. So my belief is that at last we have a key to those heretofore inexplicable cases of vaginismus—that is, that it is due to little overlooked fissures lying about the vulva, among the carunculæ myrtiformes, and about the mouth of the urethra, which are constantly sources of irritation to the peripheral nerve, and that until this inflammation is cured we can no more expect the constrictors of the vagina to cease their muscular spasms than we could expect to cure the orbicular spasm without the same kind of therapeutic treatment. As soon as I grasped the idea that the vagina and vulva were very similar structures to the conjunctiva, and that this was a true trachomatous condition, I began to treat it in the same way as we do ocular trachoma, and I am happy to say with the most satisfactory results. As I have said, I have now seen six cases. I began that treatment with a 50 per cent. solution of the peroxide of hydrogen sprayed with an atomizer three or four times, and kept playing until the surface was thoroughly clean. Then, if there were raw surfaces underneath, I have used an ointment of the yellow oxide of mercury twice daily with the most satisfactory results. The coloring of the inflammation begins to fade at once, and in the course of a very few weeks you will find a decided improvement in all of the symptoms. At the start the introduction of the index finger will make the patient writhe with the most excruciating pain, and you will feel the constriction of the muscles in the most tonic spasm. Two or three weeks of this treatment is usually enough to very materially modify this spasm and to quiet the nervous condition. You will find, though, that these cases are just like

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trachoma of the eye in another way, for every time that the patients take cold, every time that they are exposed in any way, get run down from overwork or fatigue of any sort, the inflammation lights up, and for a few days you may have to discontinue the use of your mercurial ointment and use rather soothing applications, and at the same time go to work to break up the cold or to get rid of whatever the source of disturbance has been. Just as in the eye, I find that different patients stand different strengths of the yellow oxide. One could only stand four grains to the ounce, whereas others would stand ten very comfortably. When it is too strong the reaction it produces aggravates all the symptoms, but I have always found that weakening the ointment was all that was necessary to start a satisfactory progression toward convalescence. These patients may be of any age. The youngest whom I have found was nineteen years, and the oldest fifty-five years of age. In two of the six I have found trachoma of the eyelid. In a third I found a mother whose only child had had severe, persistent trachoma of the eyelid. So that my belief is that the mode of infection is carelessness about the use of the bath towel, for, unfortunately, some people think that it is only necessary to be particular with the towel for the face, and that any towel will do for the bath. Whenever you suspect trachoma about the vagina, it would be well to investigate the eyes of the whole family. I have not yet had enough experience with it—for, as I have said, it is only two years since I made the discovery—to say positively whether this is the sole cause of vaginismus or not, but I suspect that it plays a large rôle. Five out of the six patients had it in a very marked way, and they were the only cases of vaginismus that I saw during this time. One of the most persistent cases of vaginismus which I saw several years ago I know had exactly this condition of the vulva and vagina, but I did not have sense enough then to appreciate what it really meant. So far as I can recollect, every case of vaginismus that I ever saw had a very similar condition. So that my belief is that if we watch it

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carefully we shall find that trachoma, whatever it may be, of the genito-urinary tract plays a very large rôle in our cases of vaginismus.

As to the pathology of this subject, I am as much in the dark as are the oculists. So far they have not worked out any special germ. It seems to be a mixed infection, many different germs being found in it. And as there are always so many germs about the vagina, it would be very hard indeed to isolate any particular germ of trachoma there. As I have already intimated, vascular degeneration of the vagina, and the other name for the same thing, kraurosis vulvæ, is nothing but a logical result of an old neglected trachoma which has gone on to the formation of cicatricial tissue, and is an analogous condition to the symblepharon, ankyloblepharon, and all the other deformities of the eye, for which trachoma is so proverbial. When the disease has progressed to this state there is very little that we can do to repair the ravages wrought without plastic operations; but I can testify that even in this condition the use of the yellow oxide and thorough cleanliness make the patients very comfortable. I have one patient on hand now whom I have been watching for eighteen months, who has complete blocking of the vagina about two inches up the canal. She came to me with all the symptoms that I have before described, plus cicatrices, which blocked the canal completely. She is already some years past the change of life, and was having all the nervous manifestations, combined with the exquisite tenderness of the vulva and vagina, of which I have spoken. The use of the yellow oxide keeps her perfectly comfortable. The redness has faded away, the fissures have all closed, and she now presents a perfectly healthy mucous membrane. Not knowing just how far the cicatrix extends, and not being able to tell her just how much danger the operation of opening this closure may involve, she has not yet had it done. And I hardly think it worth her while to have the vagina made patulous again; for, while her husband is still living, they

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have both already entered the declining years, and there is enough of the lower part of the vagina left to satisfy the small needs of copulation which people of this age usually have. So I think it is extremely doubtful whether any plastic operation will be done. But if she was a younger woman and there was any necessity for the work, she is in first-class condition for it to be a success. My belief is that where these deformities have occurred in the child-bearing woman, by the persistent use of the same kind of treatment which you would give in case of trachoma of the eye, through months and even years if necessary, she can be brought to such a condition that the flaps would unite and any plastic operation would be successful.

In closing this paper there are just two points on which I wish to lay special stress. The first is the persistence with which you must follow up this disease. The old oculists used to say that it took five years to cure a case of trachoma, and my experience has shown that gynecological trachoma is liable to the same kind of relapses, and we must stick to it persistently until the last vestige of redness about the mouth of the urethra and the caruncule myrtiformes is gone. Another thing that you must remember is that you cannot clean the vagina thoroughly without a speculum. Consequently, the patient cannot do all herself. A douche is a very good assistant, but it does not do thorough work and there is nothing for it but to use a good speculum, with the exposure of the whole surface, and to clean it thoroughly with peroxide of hydrogen, or any other equally bland and thorough disinfectant, and then yourself to rub this yellow oxide into every crypt and fold where the disease still persists. In the early stages this should be done at least twice a week. After you have it under control, though, two or three times a month are all that is necessary. The other point is to watch the muscular spasm. By this persistent care and attention I have made two women, who had had no intercourse for several years before I saw them, perfectly satisfactory wives, whose



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husbands now tell me that there is no trouble whatever, and that they would never know that there had been anything unusual about them. The rest are single.

In closing, I can only express the wish that the Fellows of this Society will watch these cases with reference to these last two points, for it is my belief that at last we have the key with which to solve one of the problems by which we have heretofore been baffled.

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# THE SYMPHYSEOTOMIES OF THE UNITED STATES AND OF CANADA.

By Robert P. Harris, M.D.,
*Philadelphia.*

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It will surprise many to find that symphyseotomy in America dates back fifteen years, and that it was performed with entire success in Texas in 1880, in which year there were but six operations in the world, one-third of them proving fatal to the women. Of these six cases, only one was operated upon out of Naples, and this was in Denison, Texas, under Dr. Joel O. Williams, now a country surgeon of William Penn, Washington County, in that State.

Dr. Williams was at that time in the commencement of his career as a physician, and was called upon to deliver a *single* girl of thirteen, the birth of whose child under the circumstances he promised to keep a secret. Finding the girl's pelvis small and the fœtal head large, and failing to deliver with the forceps, it occurred to him that he could gain pelvic space by separating the symphysis pubis, which he had seen cut through as a matter of curiosity by an associate in a Cincinnati dissecting-room.

Dr. Williams was a student of the Miami College, from Kentucky, and knew nothing of symphyseotomy, which was not lectured upon; neither did his obstetric text-book mention it as a scheme of delivery. He had not heard of Sigault or of the revival of his method under Professors Morisani and Novi in Naples. Getting his medical education under close economy, he had no advantages other than those afforded by

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the college lectures and the few books he was obliged to purchase. His operation, in so far as he was concerned, was an original idea begotten under the necessity of the moment, and was performed with a tenotomy knife, which enabled him to deliver a twelve-pound male fœtus with the forceps under a pubic separation which admitted of his forcing in the tissues of the mons veneris with the ends of the fingers.

As the operator was forced to do his work without assistance, it will be of interest to repeat what he wrote in a letter to me more than a year ago, in which he described the method adopted. The girl being brought under the influence of chloroform and placed partly on her left side, "I flexed the right leg strongly upon the thigh, and the thigh upon the abdomen, and sat down upon the edge of the bed in such a manner as to retain her leg in the above position. My right arm and hand were between her two legs; her right leg was retained in a flexed state by my left shoulder and breast, my left arm being passed under her right thigh and the hand used to depress the clitoris. In my right hand I carried a Tiemann tenotomy knife; I passed the point through the tissue just over the inferior margin of the joint, and, directing it upward, carried it in that direction. I then set free the clitoris and took hold of the pubic hair, by which I sustained the dermal pubic covering from the point of the knife, and after some effort discovered that the blade was evidently in the symphysis. I then used both hands in directing the knife, so as to prevent any slip or awkward cut being made. The bones were separated, and when I felt them yield I withdrew the knife and set the legs apart. I think the girl may have been conscious when I delivered the child by the forceps."

Dr. Williams is broad shouldered and strongly built, which enabled him to hold the girl while he operated; the women of the household absented themselves, being too much frightened to be of any assistance. It was not intentional that he was without a consultant, as he sent for a prominent physician in the night, and the messenger returned with a report that

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he was not at home. This was an error, as the books of the physician have since shown, and it is now thought by Dr. Williams that the messenger gave a false report designedly so as to compel him to be alone in the secret. This secret was kept so securely for nearly fourteen years that no physician ever heard of the case during that period either in Denison or elsewhere. The girl recovered, the boy lived, the mother married and removed, and Dr. Williams settled in his present location more than twelve years ago. Here in 1884 and in 1889 he performed a second and a third symphyseotomy before anyone in America operated.

I first heard of these operations in February, 1894, and at once took steps to ascertain whether Dr. Williams's statements were to be credited or not. I wrote to physicians in Denison and its vicinity and found they knew nothing of his first case, and never having heard of it did not hesitate to brand the report as a fabrication and its author as entirely unreliable. If I could have furnished them, as they proposed, with the name of the family or the number of their house and name of the street, they would no doubt have traced up the whole case and the subsequent history of the girl. But this, Dr. Williams did not feel in conscience that he had any right to do, so he endured their charges rather than fail in his professional obligations to his young patient, whom he presumed might have married in the meantime and become the mother of other children.

I opened a correspsndence with Dr. Williams on February 28, 1894, which has been kept up to the present time, and on March 2d of the same year sent him a blank table for the three cases, which he filled up and returned with the points presented at the head of my tabular record.

Finding all of Dr. Williams's statements discredited becausc of the doubts regarding the Denison case, I secured the preparation of affidavits taken before the Court, which settled his veracity as to Cases II. and III,, and rendered it highly probable that he had told the truth as to the case secretly

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operated upon in Denison at an earlier period. This is the view taken in a letter to me by a prominent physician in Denison, who expressed his pleasure at finding that the pioneer symphyseotomy of America belonged to the credit of Texas.

Having proved the performance of operations two and three, the next step was to search for and find the subject of the first operation, who had not been heard of for several years, although believed to be still alive. This search had to be made with much care and tact, so as not in any way to make known the early history of the woman. After some months, she was traced to a leading city in the far South, where she occupied a good social position as a wife and mother. As her pelvis had developed with mature years, she was able to give birth naturally to several children. The symphyseotomy boy is well grown, and was fifteen years old on April 29th ult.

In the second operation of Dr. Williams, an incision was made at the top of the symphysis, of an inch and a half in length, and the separation was effected by carrying a curved probe-pointed bistoury behind the joint and cutting from within outward. In this case there was less pubic separation than in the first, and the fœtal head was thought somewhat enlarged by hydrocephalus, as shown by the discharge of an extra amount of fluid under perforation. The computation of two and three-eighths inches for the *conjugata vera* must have been an error, as the woman delivered herself of a living male fœtus twenty-six and a half months later. The patient and boy now live in northern Georgia, where she gave her affidavit. I have her full-length photograph, taken quite recently in Covington, Ga.

Dr. Williams's third operation was upon a colored woman far advanced in Bright's disease, and having a contracted pelvis. The pubic bones separated two inches, and the child, strange to say, lived a year, although the mother died of uræmia in sixty hours. The doctor was assisted by a farmer

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who had studied medicine a year, and then gave it up; he gave an affidavit in court as to the method of delivery.

It is the height of folly in anyone to try to make out Dr. Williams a fabricator of his cases. The physicians of Denison doubted his veracity; but after the receipt of numerous letters during fifteen months, and a personal interview, I have not been able to find the least evidence in vindication of their estimate of his character. Certainly the account of his operation in their city reads very little like a romance. Dr. Williams lived a few years in Denison, where he was not thought a surgeon; but the spirit of surgery was in him, and it has developed to a marked degree in the last eight years. He is an original thinker, and has nerve and humanity enough for his work; but shows no anxiety for notoriety, and has not reported some of his most creditable works. I have not been able to find in him the least tendency to departure from the truth or to distortion of facts; and to question his veracity is an insult to his sense of honor. He is ambitious, but it is in the line of professional improvement, and had he the means would put himself in a position to perfect his knowledge by observation and study.[1]

Although Dr. Williams, who bears a good name in his section of Texas, was undoubtedly the first to perform symphyseotomy in America, his having done so was not known to others until after it had been performed forty times by other men, with a saving of thirty-one children and thirty-five women. Thirty-one operators in ten States had reported their cases before Dr. Williams felt that he was at liberty to reveal the particulars of his own secreted work. He, therefore, had nothing to do with the introduction of the operation and commending it to his medical brethren. The operation was commended and described to the Fellows of this Society on September 20, 1892, and in seventeen days, as opportunity favored, there were three women delivered under it, and this

[1] He is now studying surgery and surgical anatomy in Baltimore.

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number increased to seven without a maternal death in the next three months, although two children died within three days after birth. These seven bore fruit in the multiplication of cases in 1893, when thirty-one operations took place, making the United States the second in point of numbers for that year, as compared with the countries of Europe, the lead being that of Germany, which had six cases more. These thirty-one symphyseotomies lost five women and eight children, a proportion that was somewhat discouraging to its advocates, and gave an excuse for the opposition of others, who were not convinced of its thorough practicability. Since the close of 1893 there have been thirty-three operations, with a mortality of four women and eight children. The operation is still in its infancy in America, and much has yet to be learned, and much more care taken, before the mortality can be reduced to the low percentage of Italy for the last nine years.

General Summary of the Cases in the United States. We have had seventy-four symphyseotomies in fifteen years, and seventy-one in two years and seven months. There were ten prior to January 1, 1893; thirty-one in the year 1893; twenty-six in 1894; and seven thus far in 1895.[1]

| States. | Cases. | Women died. | Children lost. |
|---|---|---|---|
| Pennsylvania | 24 | 4 | 6 |
| New York | 24 | 2 | 4 |
| Illinois | 9 | 2 | 1 |
| Texas | 3 | 1 | 1 |
| California | 2 | ... | 1 |
| Massachusetts | 2 | ... | 1 |
| Washington | 2 | ... | 1 |
| New Jersey | 2 | ... | 1 |
| Louisiana | 1 | 1 | 1 |
| Maryland | 1 | ... | 1 |
| Maine | 1 | ... | ... |
| Ohio | 1 | ... | ... |
| Oregon | 1 | ... | ... |
| District of Columbia. | 1 | ... | ... |
| | 74 | 10 | 18 |

[1] There have been 84 (October), with 10 deaths.

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The seventy-four operations were the work of forty-four operators, and fifteen of them are Fellows of this Society. These fifteen operated thirty-seven times, and lost four women and nine children. Of the seventy-four women ten died, and of the children eighteen were lost. The cases were distributed throughout the United States as above:

CAUSES OF DEATH IN THE TEN FATAL CASES. The numbers given refer to the tabular record, in which the cases are not stated. By associating them together, the causes can be better considered and avoided.

CASE III.—Death unavoidable. Subject far advanced in Bright's disease, with kidney action suspended. Death from uræmia in sixty hours. Child lived a year.

CASE XII.—Woman believed to be beyond hope; child still alive, and brow presenting. Opening the symphysis permitted version by the vertex. Woman and child unskilfully treated before removal to the hospital; both died in a few hours.

CASE XVII.—Patient believed to have been infected with sepsis through uncleanly obstetric management prior to the operation; she died of septic peritonitis on the eleventh day.

Case XIX. was intemperate, and is believed to have caught cold on her way to the Maternity when in labor, and exposed to cold and dampness. She died of double pneumonia in seventy-two hours. Two accoucheurs in charge said there were no septic symptoms.

CASE XXIX.—A multipara of forty-two years; was three days in labor before going to the Maternity. She died of direct sepsis from the wound behind the symphysis on the eleventh day.

Case XXXIX. was a multipara of forty-three years; in labor thirty-six hours, and in bad condition when she entered the hospital. Her vagina was badly torn and œdematous from attempts to deliver before going to the hospital. She had a pulse of 140, and temperature of 102°. Death occurred in twelve hours from shock; she was also septic.

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CASE XLIV.—Subject an undeveloped girl of fourteen years, living in extreme poverty; was in labor twenty-eight hours, and twenty-two of them under the care of a young physician. She died of septic peritonitis in five days. Child believed to have died under forceps pressure. Hygienic surroundings very bad.

CASE LVI.—Subject was a fat colored multipara believed to weigh two hundred and thirty pounds. She was in labor sixty hours; had a small pelvis and a very large fœtus. Vigorous and prolonged attempts were made to deliver by the forceps before the operation, fracturing, as was afterward found, the os frontis and os occipiti of the fœtus. Operation by direct incision through three inches of fat. Wound healed by first intention; but injuries to the vagina by the forceps resulted in gangrene, of which the woman died on the fifth day.

Case LXX. was in labor at intervals for a week; but was in a "fairly good condition" when operated on. She died of septic peritonitis on the fourth day, which was attributed to infection through an opening in the anterior vaginal wall.

Case LXXIV. was a primipara of nineteen years; in labor nineteen hours, and in good condition when operated upon. She had a rachitic pelvis, and was delivered by the forceps. Her death was due to septic peritonitis and was said to be a radiation "from the prevesical space." She died on the seventh day.

Cases XII., XIX., XXIX., XXXIX., LXX., and LXXIV. died in the hospital; and Cases III., XVII., XLIV., and LVI. in private practice.

In Cases III., XII., XXXIX., and LVI. the prognosis was very unfavorable at the commencement of the operation. In only two cases was the condition of the patient a favorable one for symphyseotomy.

*The mortality of the children* is one of the drawbacks to symphyseotomy, and with proper care might be much reduced, as it has been, by long experience and thoughtful management in

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Italy. As it is a substitute for craniotomy, the life of the fœtus should be regarded as one of primary importance. The Cæsarean operation in our country has been very disheartening in its results. It is less fatal to the children than symphyseotomy, but far more fatal to the mothers. There are Maternities in Europe, like those of Leipsic and Dresden, where the Cæsarean section has a very low percentage of death—so much so that it is preferred by certain obstetric surgeons to symphyseotomy. Operators like Zweifel regard both means of delivery with favor, having had good success with each. The danger in symphyseotomy does not lie so much in the pubic section as in injuries produced by the forcible delivery of the fœtus under forceps of unsafe form and adaptation. If the fœtus is known to be dead before the operation, the case is an exceptional one, where the delivery should be by symphyseotomy. Of the eighteen children lost in the United States, four were already dead before the operation; two were destroyed by craniotomy in preparation for delivery, having hydrocephalus; four died in delivery, two by version, the head being too large for the pelvis, and two by forceps pressure; six died on the first day after delivery, some from forceps injury; and one died on the third day.

*The weight of the American fœtus* is to be considered in calculating the minimum *conjugata vera* for our operations, and this should not be less than seven centimetres, or two and three-quarter inches, because, by a careful calculation, forty-four male fœtuses delivered under symphyseotomy weighed an average of eight pounds three ounces, and twenty-five females eight pounds one ounce. The Italian minimum of sixty-seven millimetres is too small for the average American baby's head. The biparietal measurements of many that have been delivered show this: three and three-quarter inches in eleven cases, four inches in seven, four and an eighth inches in three, four and a quarter inches in four, four and three-sixteenths inches in one, and four and five-sixteenths inches in one. The largest fœtus weighed fifteen and a half pounds, and was brought

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through a conjugate of four inches by a pubic separation of four inches; the urethra and bladder were lacerated and were repaired by suturing. The boy was lost in eight days by a diarrhœa produced by improper feeding (see Case XXXII. of table).

*The separation of the pubic bones* has shown a variation of from one inch to as great as five inches, the ordinary measure being about two inches. The five-inch separation occurred in Case LV., under the care of Prof. Henry J. Garrigues, of New York, who says that it resulted "by the mere weight of the legs, without manual separation." The patient had a soft tumor apparently in the recto-vaginal wall, and a fœtus of ten and three-quarter pounds. Three and a half months after the operation she had a waddling gait, a cystocele, and sometimes pain in the sacro-iliac and pubic symphyses. The symphysis pubis was firm. She was cured by a vaginal hysterectomy and double oöphorectomy. A separation of two inches, or even three inches, is quite compatible with a perfect convalescence and recovery. There is no occasion to suture the bones in the Italian method, as they can be held securely together by bandages and adhesive strips. The dressing for fixation should be unchanged at first, as removing the restraint upon the parts favors the production of a mobile union. Treat the joint as a fracture, and let it be kept as still as possible during the first two weeks.

THE DELIVERY OF THE FŒTUS AFTER INCISION. To permit a woman to deliver herself, as was formerly done in Naples in about one case out of four, has not been the practice in the United States in head presentations, except in two instances. Fifty-four fœtuses were delivered by the forceps, and in eighteen cases podalic version was employed; one breech case was delivered by the feet. Of thirty-four primiparæ, twenty-four were delivered by the forceps, nine by version, and one by manual aid. Of the children of primiparæ, three were dead before the operation, two more were destroyed by craniotomy, two died under delivery by podalic version,

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one under the forceps, three died on the first day, and one on the third. Of the forty women who had borne previously from one child to eleven, two were delivered of children already dead, two children died of forceps injuries, one in delivery, one in six hours, two died shortly after delivery.

AFTER-HISTORY OF SYMPHYSEOTOMY CASES. Under the suprapubic section of Morisani, where the tissues covering the symphysis are not incised, as in the French operation, and where stitching cannot be employed to keep the bones in apposition, women have, as a rule, made good and rapid recoveries under a proper pelvic fixation. This has been the experience of Neapolitan operators expressed to me in writing, and they have had occasion to operate upon quite a number of women for a second time. Two women now living in Philadelphia have been the subjects of two operations each, and their convalescence certainly recommends the operation. The records of symphyseotomy of recent years have set aside the old objection to it, of severe injury done to the sacro-iliac synchondroses. This objection was very tenable in the days of Galbiati, of Naples, but the cases of this form of injury must be very rare now, in properly conducted operations. Opening the symphysis to the extent of three inches has been done with impunity in Naples and elsewhere, so far as these joints are concerned. But this is not the chief element of danger; neither is the claim that the symphysis pubis will not unite firmly, or may be a long time in doing so. The danger lies in the effect that is produced upon the urethra, vagina, and uterus, in the delivery of the fœtus by the forceps, and the forcing open of the symphysis by the passage of its head under traction. The danger of sepsis lies in the torn or injured parts, and these must be at once repaired if it is to be prevented. Sepsis originating in the parts behind the symphysis may be avoided by packing with a tent of iodoform gauze if there is bleeding, or by a drainage tent simply if not. There is a very serious connection between the length of labor, prior attempts at delivery, and the fatal issue of a given case.

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Sepsis may be already established, and the condition of the woman made very critical before the knife is used. We admit that the true place for a symphyseotomy is in a well-conducted Maternity; but for success, the woman must enter before anything has been done, or, better still, before labor. Emergency cases received in hospital have added three to their quota of deaths. Thirty-eight women were operated upon in private practice and thirty-six in hospital, in the United States. Four women died in private practice and six in the hospital. Three children were already dead in the private cases and two in the hospital. Six children were lost in the private cases and seven in the hospital. These are the facts, but they do not make a fair comparison for the Maternity results, especially as regards the deaths of the women.

THE LAMENESS OF PATIENTS FOLLOWING SYMPHYSEOTOMY. Objectors to this operation make a great deal of capital out of a few cases of ununited symphyses. As there are cases of ununited fracture of long bones, so there will be exceptional ones of ununited symphyses, and an ambling gait, or even an inability to walk. I have not met with a case, but have heard of such through correspondence. Sometimes there has formed an abscess, and been an exfoliation of a little piece of bone or of a cartilage. Sometimes the bones have united, so as to admit of a perceptible mobility, but without lameness. One such woman had an alternate motion upward and downward of three-eighths of an inch, and gave birth to a second fœtus without an operation; she had a *conjugata vera* of three inches. The worst case known to me was in a syphilitic woman, and took six months to recover. The proportion of cases is very small, and may be made still less by a proper after-treatment.

As lacerations of the cervix uteri, the vagina, urethra, and perineum are some of the consequences of forcible delivery of the fœtus after pubic section in primiparæ, the form of instrument and its mode of application are important. The axis traction forceps as originally devised by Tarnier, with its

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Davis blades, oval fenestræ, and beveled edges, was an innocent instrument compared to many of its modifications, having the older kite-shaped fenestræ. If the Davis blade is applied over the parietal protuberances, it will occupy but little space, and should not of itself injure either child or mother. If there is too great a disproportion between the fœtal head and pelvis, the soft parts may be injured by the head itself. The capabilities of the forceps for doing injury appear to have been demonstrated to such a degree in Vienna as to have reacted against symphyseotomy and in favor of the Cæsarean section. The form of forceps in use in the Krankenhaus must be largely at fault. Our own operators should be particularly cautious, in view of the fact that American women produce larger fœtuses on the average than European women do.

My paper will hardly be complete without a statement concerning the extension and increase of symphyseotomy throughout the world. In 1891 the operation was entirely confined to Naples, which in that year had twelve cases, saving all the women and ten children. In 1892 it increased more than seven times, and was performed in twelve countries besides Italy. One death in eight and a half cases in 1892, and one in eight and two-ninths cases in 1893.

SYMPHYSEOTOMIES OF 1892.

| Countries. | Cases. | Women died. | Children lost. |
|---|---|---|---|
| France | 37 | 6 | 13 |
| Germany | 12 | 2 | 4 |
| Italy | 11 | ... | 1 |
| United States | 7 | ... | 2 |
| Austria | 7 | ... | 2 |
| Russia | 4 | 1 | 1 |
| Holland | 1 | 1 | ... |
| Brazil | 1 | ... | ... |
| Denmark | 1 | ... | ... |
| Ireland | 1 | ... | ... |
| Switzerland | 1 | ... | ... |
| Canada | 1 | ... | ... |
| India | 1 | ... | 1 |
| 13 countries | 85 | 10 | 24 |

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SYMPHYSEOTOMIES OF 1893.

| Countries. | Cases. | Women died. | Children lost. |
|---|---|---|---|
| Germany | 37 | 1 | 8 |
| United States | 31 | 5 | 7 |
| Austria | 30 | 7 | 4 |
| France | 24 | 4 | 5 |
| Russia | 10 | 1 | 3 |
| Italy | 5 | ... | 2 |
| Belgium | 2 | ... | ... |
| Canada | 2 | ... | ... |
| Switzerland | 1 | ... | ... |
| Sweden | 1 | ... | ... |
| Roumania | 1 | ... | ... |
| England | 1 | ... | ... |
| Holland | 1 | ... | ... |
| Brazil | 1 | ... | ... |
| India | 1 | ... | ... |
| 15 countries | 148 | 18 | 29 |

The record of 1892 is believed to be very complete, as there has been time to collect the cases, and five statisticians worked upon it in correspondence in different countries. The table of 1893 is mainly due to the persevering labors of Dr. Franz Ludwig Neugebauer, of Warsaw, the most celebrated of all European statisticians. I have extended his list by an addition of American cases.

The average mortality under symphyseotomy is frequently inquired for, and has been conjecturally stated at ten per cent.; but this is not correct, as these tables will show. Under the operators of Naples, Pinard, of Paris, and Zweifel, of Leipsic, the death-rate has been much lower than this. In Italy, from January 1, 1886, to January 1, 1894, there were fifty-three operations, with a loss of two women and eight children. In the clinique Baudelocque, of Paris, there have been four women lost out of forty-eight; and in Germany, in 1893, the mortality (one in thirty-seven) was but two and three-quarters per cent. These are the possibilities of the operation; but the general mortality in all countries, taken collectively, is thirty-four in three hundred and three, or over eleven per cent.

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The record of the United States and Canada of ten deaths in seventy-nine is over twelve per cent. The record of this country has been taken very thoroughly, as the fulness of the points in the table will bear witness; and a very large proportion of the cases has been obtained or perfected by correspondence. Records have been secured that would never have been published, and the high rate of mortality is in a measure due to the search having been made without any desire to show other than the exact results, whether favorable or fatal, and a much more persevering hunt has been made for those cases which operators are not at all anxious to report in journals. After the character of the search made for American symphyseotomies, I am a little skeptical as to the thoroughness of the reports issued in European countries. What is wanted is a persevering local search made by a citizen of each country where any given operation is being performed, and then an intercommunication of the several parties engaged. This was done for the record of 1892.



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SYMPHYSEOTOMIES OF THE

| No. | Date. | Operator. | Locality. | Hospital or private. | Age | No. of pr'g | Cause of difficulty. | Time in labor. |
|---|---|---|---|---|---|---|---|---|
| 1 | Apr. 29, 1880 | Dr. Joel O. Williams. | Dennison, Tex. | Private. | 13 | 1 | Transversely contracted pelvis. | 18 hrs. |
| 2 | July 15, 1884 | Dr. Joel O. Williams. | William Penn, Washington County, Tex. | Private. | 23 | 1 | Contracted pelvis. | 18 hrs. |
| 3 | May 5, 1889 | Dr. Joel O. Williams. | William Penn, Tex. | Private. | 18 | 1 | Cont. pelvis and uræmic convulsions. | 4 days |
| 4 | Sept. 30, 1892 | Prof. Charles Jewett. | Brooklyn. | Private. | 22 | 1 | Narrow inferior strait. | 21 hrs. |
| 5 | Oct. 3, 1892 | Prof. Bart. Cooke Hirst. | Philadelphia. | Maternity of Univ. of Pa. | 19 | 1 | Contracted pelvis. | 46 hrs. |
| 6 | Oct. 7, 1892 | Prof. Anna E. Broomall. | Philadelphia. | Maternity of Woman's Hospital. | 30 | 7 | Contracted pelvis. | 24 hrs. |
| 7 | Oct. 25, 1892 | Prof. J. Edwin Michael | Baltimore. | Free Hospital for Women. | 17 | 1 | Narrow inferior strait; rachitic. | 24 hrs. |
| 8 | Dec. 5, 1893 | Dr. Charles P. Noble. | Philadelphia. | Kensington Hospital for Women. | 30 | 5 | Contracted pelvis. | 11 hrs. |
| 9 | Dec. 16, 1892 | Dr. Harry McKennan. | Paris, Ill. | Private. | 31 | 3 | Rachitic pelvis. | 12 hrs. |
| 10 | Dec. 30, 1892 | Prof. H. J. Garrigues. | New York. | Private. | 24 | 2 | Generally contracted pelvis, male type. | 36 hrs. |
| 11 | Jan. 1, 1893 | Prof. J. Milton Duff. | Pittsburg. | Private. | 44 | 11 | Exostosis from injury of pelvis. | 48 hrs. |
| 12 | Jan. 9, 1893 | Prof. W. T. Lusk. | New York. | Emergency Hospital, Bellevue. | 27 | 1 | Small pelvis; brow presenting; large head. | 25 hrs. |
| 13 | Jan. 13, 1893 | Dr. Wolrad Winterberg. | San Francisco, | Private. | 28 | 1 | Funnel-shaped pelvis. | 24 hrs. |
| 14 | Feb. 5, 1893 | Dr. Henry C. Coe. | New York. | New York Maternity Hospital. | 30 | 1 | Simple flattened pelvis. | 14 hrs. |
| 15 | Feb. 11, 1893 | Dr. Egbert H. Grandin. | New York. | Infant Asylum. | 19 | 1 | Generally contracted pelvis. | 14 hrs. |
| 16 | Feb. 20, 1893 | Dr. Egbert H. Grandin. | New York. | Infant Asylum. | 20 | 1 | Generally contracted pelvis. | 7 hrs. |

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## UNITED STATES OF AMERICA.

| C. V. diameter. | Part presenting. | Aid to delivery | Result to woman. | Result to child. | Sex of chd. | Weight of child. | B. P. diameter. | References. |
|---|---|---|---|---|---|---|---|---|
| ? | R.O.A. | Forceps. | Recov. | Lived. | M. | 12 lbs. | ? | Communicated by the operator in 1894. (Woman and boy alive and well in 1895.) |
| ? | L.O.A. | Forceps. | Recov. | Dead; craniotomy. | M. | ? | ? | Communicated by the operator in 1894. (Woman alive and well in 1894.) |
| Trans. 3 in. | Vertex. | Forceps. | Died in 60 hrs. | Lived. | M. | 8 lbs. | 3⅜ in. | Communicated by the operator in 1894. Med. News, Philadelphia, Jan. 26, 1895, p. 107. |
| Bi-ischiat. 2½ in. | Vertex. | Manual. | Recov. | Died in 24 hrs. | M. | ? | 3½ in. | New York Journ. Gyn. and Obst., Nov. 1892, pp. 1079–1082. |
| C. V. 3 in. | Vertex. | Forceps. | Recov. | Lived. | F. | 6⅝ lbs. | 3½ in. | Med. News, Phila., Oct. 15, 1892, pp. 431–433. Trans. Coll. of Phys. Phila., 1893, p. 237 |
| 3¼ in. | Vertex. | Forceps. | Recov. | Lived. | F. | 6¼ lbs. | 3¼ in. | Amer. Journ. Obst., 1893, xxviii. pp. 303–312. |
| C. D. 3½ in. | Vertex. | Forceps. | Recov. | Died on 3d day. | M. | 6½ lbs. | 4 in. | Maryland Med. Journ., Jan. 31, 1893, p. 268. Communication of Nov. 5, 1892. |
| C. V. 2¼ in. | Vertex. | Version and forceps. | Recov. | Lived. | M. | 8½ lbs. | 3¾ in. | Med. News, Phila., Feb. 18, 1893, pp. 176–181. Trans. Coll. Phys. Phila., 1893, pp. 56–60. |
| 2¾ in. | Left arm. | Version and forceps. | Recov. | Lived. | F. | 8 lbs. | Average | Med. News, Phila., Feb. 4, 1893, p. 130. (Symphysis divided by a metacarpal saw.) |
| 3¼ in. | Vertex. | Version. | Recov. | Lived. | M. | 7½ lbs. | 4 in. | Amer. Journ. Med. Sci., March, 1893, pp. 286–298; April, 1893, pp. 399–417. |
| 3¼ in. | Vertex. | Version. | Recov. | Lived. | M. | 9 lbs. 3 ozs. | 3¼ in. | Communicated by the operator, Feb. 1893. |
| About 4 in. | Brow. | Version by vert. and forceps. | Died in 12 hrs. | Died in 17 hrs. | M. | 9 lbs. | 4½ in. | Communicated by the operator, March 3, 1893. Amer. Journ. Med. Sci., April 1893, p. 441. |
| Trans. inf. 3½ in. | L.O.A. | Forceps. | Recov. | Lived. | M. | 9 lbs. estim. | ? | Med. News, Phila., Jan. 12, 1895, pp. 29–35. Communication of the operator. |
| C. V. 3 in. | Vertex. | Version. | Recov. | Lived. | F. | 8 lbs. 1½ oz. | 4¼ in. | Communicated by the operator, March 27, 1893. New York Med. Rec., 1893, xliii. p. 485. |
| 3¼ in. | Vertex. | Forceps. | Recov. | Lived. | M. | 7 lbs. 1 oz. | 3½ in. | Communicated by the operator, New York Journ. Gyn. and Obst., 1893, iii. pp. 461–465. |
| 3¼ in. | Vertex. | Version. | Recov. | Lived. | F. | 5 lbs. 6 ozs. | 3⅜ in. | Op. cit. Amer. Journ. Med. Sci., May, 1893, pp. 518–520. |

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| No. | Date. | Operator. | Locality. | Hospital or private. | Age | No. of pr'g | Cause of difficulty. | Time in labor. |
|---|---|---|---|---|---|---|---|---|
| 17 | Mar. 1, 1893 | Dr. George N. Kreider. | Springfield, Ill. | Private. | 26 | 1 | Small pelvis and large head. | 16 hrs. |
| 18 | Mar. 3, 1893 | Dr. Horatio R. Holmes. | Portland, Ore. | Private. | 23 | 1 | Contracted pelvis. | 60 hrs. |
| 19 | Mar. 8, 1893 | Dr. Edward P. Davis. | Philadelphia. | Maternity of Jefferson College. | 30 | 4 | Flat, rachitic pelvis. | 20 hrs. |
| 20 | Mar.22, 1893 | Prof. Anna E. Broomall. | Philadelphia. | West Phila. House for Women. | 25 | 2 | Contracted pelvis. | 50 hrs. |
| 21 | Mar.24, 1893 | Dr. J. Clifton Edgar. | New York. | Private. | 24 | 1 | Contracted pelvis. | 48 hrs. |
| 22 | Mar.31, 1893 | Dr. Horace Packard. | Boston. | Massachusetts Homœopathic Hosp. | 28 | 1 | Small pelvis. | 48 hrs. |
| 23 | Apr. 22, 1893 | Dr. Daniel Longaker. | Philadelphia. | Private (first operation). | 30 | 4 | Flat pelvis. | 10 hrs. |
| 24 | May 3, 1893 | Prof. H. Parker Newman. | Chicago. | Private. | 29 | 2 | Generally contracted pelvis. | 24 hrs. |
| 25 | May 4, 1893 | Dr. Julius O. Cobb. | Port Townsend, Wash. | Private. | 28 | 1 | Equally contracted pelvis. | 21 hrs. |
| 26 | May 8, 1893 | Dr. E. Gustav Zinke. | Cincinnati. | Private. | 32 | 6 | Flat pelvis. | 72 hrs |
| 27 | June 13, 1893 | Dr. Robert L. Dickinson. | Brooklyn. | Flatbush Hospital. | 26 | 2 | Flat and generally contr'd pelvis. | 12 hrs. |
| 28 | June 23, 1893 | Prof. Robert A. Murray. | New York. | New York Maternity Hospital. | 36 | 4 | Small pelvis, with impaction. | 6 hrs. |
| 29 | June 26, 1893 | Prof. Anna E. Broomall. | Philadelphia. | Maternity of Woman's Hospital. | 42 | 12 | Flat pelvis. | 3 days |
| 30 | June 27, 1893 | Prof. Bart. Cooke Hirst. | Philadelphia. | Philadelphia Hospital. | 32 | 1 | Rachitic pelvis; dwarf, 4 ft. 6 in. | Induced. |
| 31 | July 21, 1893 | Dr. Cæsar A. von Raudohr. | New York. | Private. | 23 | 2 | Justo-minor pelvis. | 5 hrs. |
| 32 | Aug.28, 1893 | Dr. John Wotherspoon. | Seattle, Wash. | Private. | 19 | 2 | Disproportion between size of head and outlet. | 10 hrs. |
| 33 | Sept. 1, 1893 | Prof. Sheldon Leavitt. | Chicago. | Private. | 30 | 3 | Equally contracted pelvis. | 24 hrs. |

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| C. V. diameter. | Part presenting. | Aid to delivery | Result to woman. | Result to child. | Sex of chd. | Weight of child. | B. P. diameter. | References. |
|---|---|---|---|---|---|---|---|---|
| About 3 in. | Vertex. | Forceps. | Died on 11th dy. | Dead before operat'n | M. | 8 lbs. | ? | Communicated by the operator, March 19, 1893. Trans. Ill. Med. Soc., 1893, xliii. pp. 267–276. |
| 3 in. | Vertex. | Forceps. | Recov. | Lived. | F. | 7½ lbs. | 3¾ in. | New York Journ. Gyn. and Obst., May, 1893, pp. 405, 406. Communication of June, 1893. |
| 3⅝ in. | Vertex. | Forceps | Died in 72 hrs. | Lived. | F. | 7¾ lbs. | 3½ in. | New York Med. Rec., May 13, 1893, pp. 577, 578. |
| 3¼ in. | Vertex. | Forceps. | Recov. | Dead before operat'n | F. | 8¼ lbs. | 4 in. | Amer. Journ. Obst., 1893, xxviii. pp. 303–312. |
| 3¼ in. | Vertex. | Forceps. | Recov. | Lived. | M. | 7 lbs. | 3½ in. | Communicated by the operator, New York Med. Journ., March 17, 1894, vol. lix. p. 343. |
| 2¾ in. | Vertex, | Forceps. | Recov. | Dead before operat'n | M. | 9 lbs. | 3½ in. | Communication of May 10, 1893. Daily Med. Cent., May 20, 1893, pp. 7, 8. |
| 3 in. | Shoulder. | Version by vert. and forceps. | Recov. | Lived. | M. | 7 lbs. | 3¼ in. | Communicated by the operator, May 3, 1893. Annals of Gyn. and Ped., Phila., 1893–94, vii. p. 450. |
| 3½ in. | Vertex. | Forceps. | Recov. | Lived. | F. | 12 lbs. | 4 in. | Communicated by the operator, Jan. 1, 1894. Amer. Journ. Obst., Feb. 1894, pp. 250, 251. |
| ? | Vertex. | Forceps. | Recov. | Died soon afterward. | M. | 9½ lbs. | ? | New York Med. Journ., Aug. 26, 1893, p. 226. Communication of Dr. J. C. House, Nov. 22, 1893. |
| 3¾ in. | Vertex. | Forceps. | Recov. | Lived. | M. | 9 lbs. | 3½ in. | Communicated by the operator, May 29, 1893. Amer. Journ. Obst., 1893, xxviii. pp. 588, 589. |
| 3¼ in. | Vertex. | Forceps. | Recov. | Lived. | M. | 7½ lbs. | 4 in. | Communicated by the operator, June 14, 1893. Med. Rec., New York, 1893, xliv. pp. 679–681. |
| 3¼ in. | Oc.-post. R.O.P. | Forceps. | Recov. | Lived. | F. | 7 lbs. 9 ozs. | 4¼ in. | Communicated by the operator. Nov. 1, 1893. |
| 3⅝ in. | Vertex. | Forceps. | Died on 11th dy. | Lived. | M. | 6½ lbs. | 3½ in. | Amer. Journ. Obst., 1893, xxviii. pp. 303–312. |
| 2¼ in. | Vertex. | Version. | Recov. | Lived. | M. | 6¼ lbs. | 3½ in. | Communicated by the operator, Med. News, Philadelphia. |
| 3½ in. | L.O.A. | Manual. | Recov. | Lived. | M. | 8½ lbs. | 3⅞ in. | Communicated by the operator, N. Y. Journ. Gyn. and Obst., 1893, iii. pp. 185–190. |
| 4 in. | L.O.A. | Forceps. | Recov. | Lived 8 days. | M. | 15½ lbs. | ? | Communicated by the operator, Med. News, Phila., 1894, lxiv. p. 501. |
| 3 in. | Vertex. | Forceps. | Recov. | Lived. | M. | 9 lbs. | 3¼ in. | The Clinique, Chicago, Dec. 25, 1893, pp. 544–550. Communication of Jan. 10, 1894. |

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| No. | Date. | Operator. | Locality. | Hospital or private. | Age | No. of pr'g | Cause of difficulty. | Time in labor. |
|---|---|---|---|---|---|---|---|---|
| 34 | Sept. 8, 1893 | Dr. James S. Brown. | Montclair, N. J. | Private. | 25 | 2 | Contracted pelvis. | 20 hrs. |
| 35 | Oct. 12, 1893 | Prof. Bart. Cooke Hirst. | Philadelphia. | Maternity of Univ. of Pa. | 22 | 1 | Rachitic pelvis; dwarf, 4 ft. 7 in. | Induced. |
| 36 | Nov. 8, 1893 | Dr. J. Clifton Edgar. | New York. | Private. | 19 | 1 | Generally contracted pelvis. | 24 hrs. |
| 37 | Nov.19, 1893 | Dr. Richard C. Norris. | Philadelphia. | Maternity of Univ. of Pa. | 18 | 1 | Flat pelvis. | 89 hrs. |
| 38 | Nov.24, 1893 | Prof. T. Byron Robinson, | Chicago. | Private. | 27 | 1 | Transversely contracted pelvis. | 16 hrs |
| 39 | Dec. 19, 1893 | Dr. Thomas J. Watkins. | Chicago. | Cook County Hospital. | 43 | 8 | Generally contracted pelvis. | 36 hrs. |
| 40 | Dec. 23, 1893 | Dr. Edward P. Davis. | Philadelphia. | Maternity of Jefferson College. | 25 | 2 | Justo-minor pelvis. | 31 hrs. |
| 41 | Dec. 30, 1893 | Dr. Daniel Longaker. | Philadelphia. | Private. | 30 | 5 | Flat pelvis. | 24 hrs. |
| 42 | Jan. 12, 1894 | Dr. J. Clifton Edgar. | New York. | Private. | 25 | 2 | Generally contracted pelvis. | 14 hrs. |
| 43 | Feb. 17, 1894 | Dr. Henry Banga. | Chicago. | Chicago Polyclinic. | 37 | 5 | Rachitic pelvis. | 16 hrs. |
| 44 | Feb. 19, 1894 | Dr. Charles W. Coburn. | Philadelphia. | Private. | 14 | 1 | Undeveloped pelvis. | 28 hrs. |
| 45 | Mar.16, 1894 | Dr. Edward P. Davis. | Philadelphia. | Maternity of Jefferson College. | 20 | 1 | Justo-minor pelvis, threatening of eclampsia. | Induced. |
| 46 | Mar.19, 1894 | Dr. Charles P. Noble. | Philadelphia. | Kensington Hospital for Women. | 32 | 6 | Contracted pelvis. | 10 hrs |
| 47 | April 3, 1894 | Dr. Charles P. Noble. | Philadelphia. | Private. | 34 | 7 | Flat, rachitic pelvis. | 38 hrs. |
| 48 | April 7, 1894 | Dr. Edward P. Davis. | Philadelphia. | Maternity of Jefferson College. | 33 | 1 | Flat, rachitic, funnel-shaped pelvis. | 30 hrs. |
| 49 | Apr. 26, 1894 | Prof. Bart. Cooke Hirst. | Philadelphia. | Private. | 30 | 2 | Flat, rachitic, pelvis. | 8 hrs. |
| 50 | May 10, 1894 | Dr. James B. O'Neill. | Portland, Me. | Maine Eye and Ear Infirmary. | 28 | 3 | Generally contracted pelvis. | 26 hrs. |
| 51 | May 14, 1894 | Dr. George Gross. | San Francisco. | Private. | 30 | 2 | Head locked after delivery of breech. | 12 hrs. |

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| C. V. diameter. | Part presenting. | Aid to delivery | Result to woman. | Result to child. | Sex of chd. | Weight of child. | B. P. diameter. | References. |
|---|---|---|---|---|---|---|---|---|
| 2¾ in. | Vertex. | Forceps. | Recov. | Lived. | M. | 10 lbs. | 3½ in. | New York Med. Rec., Nov. 4, 1893, pp. 582, 583. |
| 2 9/16 in. | Vertex. | Version. | Recov. | Died in delivery | M. | ? | 3⅛ in. | Communicated by the operator. Trans. Coll. Phys. Phila., Dec. 6, 1893, p. 237. |
| 3¼ in. | Vertex. | Version. | Recov. | Lived. | M. | 7 lbs. | 3½ in. | Communicated by the operator, Nov. 24, 1893. New York Med. Journ., March 17, 1894, vol. lix. p. 343. |
| 2 9/16 in. | Vertex. | Version | Recov. | Died in delivery | M. | 8 lbs. | 3⅛ in. | Communicated by the operator. New Eng. Med. Monthly, July, 1893–94, xiii. pp. 462–464. |
| 3⅛ in. | L.O.A. | Forceps. | Recov. | Lived. | F. | 7 lbs. | 3½ in. | Communicated by the operator. |
| Not taken. | Vertex. | Forceps. | Died in 12 hrs. | Lived. | M. | 11 lbs. | Crushed | Amer. Journ. Obst, Feb. 1894, pp. 249, 250. |
| 2¾ in. | Vertex. | Forceps. | Recov. | Lived. | M. | 7 lbs. 11 ozs. | 4 5/16 in. | Communicated by the operator, Jan. 25, 1894. Med. News, Phila., April 14, 1894, p. 401. |
| 3 in. | Vertex. | Forceps. | Recov. | Lived. | F. | 9½ lbs. | 3 9/16 in. | Communicated by the operator, Jan. 12, 1894. Annals Gyn. and Obst., Phila., 1893–94, vii. pp. 450–457. |
| 3½ in. | Vertex. | Pod. version. | Recov. | Lived. | F. | 9 lbs. | 3¾ in. | Communicated by the operator, Feb. 19, 1894. |
| 2½ in. | Transverse. | Forceps. | Recov. | Lived. | M. | 7 11/16 lbs. | ? | Communicated by the operator. Amer Journ. Obst., Dec. 1894, p. 761. |
| 4⅛ in. | Vertex | Forceps. | Died in 5 days. | Died in delivery | M. | 11 lbs. | 4⅛ in. | Communicated by the operator. May 10, 1895. |
| 3¾ in. | Vertex. | Forceps. | Recov. | Lived. | M. | 5 11/16 lbs. | 3½ in. | Communicated by the operator. Med. News, Phila., April 14, 1894, p. 402. |
| 2¾ in. | Vertex. | Forceps. | Recov. | Lived. | F. | 6½ lbs. | 3⅝ in. | Communicated by the operator. (Second operation on Case 9.) |
| C. D. 4 in. | Vertex. | Forceps. | Recov. | Died dirctly. | M. | 8 lbs. | ? | Communicated by the operator. |
| C. V. 4 in. | L.O.A. | Forceps. | Recov. | Lived. | F. | 7½ lbs. | 3¾ in. | Communicated by the operator. Boston Med. and Surg. Journ., Aug. 23, 1894. |
| 3⅛ in. | R.O.P. | Forceps. | Recov. | Lived. | F. | 9¾ lbs. | 4 in. | Communicated by the operator. |
| 2¾ in. | L.O.A. | Forceps. | Recov. | Lived. | F. | 8 lbs. | 3½ in. | Trans. Maine Med. Assoc., 1894, pp. 477–485. |
| 2⅛ in. | Breech. | Manual. | Recov. | Dead. | F. | Average | Average | Communicated by the operator. Occidental Med. Times, Sacramento, 1894, viii. p. 538. |

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| No. | Date. | Operator. | Locality. | Hospital or private. | Age | No. of pr'g | Cause of difficulty. | Time in labor. |
|---|---|---|---|---|---|---|---|---|
| 52 | June 17, 1894 | Dr. Henry D. Fry. | Washington, D. C. | Private. | 29 | 1 | Contracted pelvis. | 45 hrs. |
| 53 | June 19, 1894 | Prof. Malcolm L. Harris. | Chicago. | Private. | 28 | 1 | Contracted pelvis. | 30 hrs. |
| 54 | June 21, 1894 | Drs. Collier and Grandin. | New York. | Private. | 28 | 2 | Flat, rachitic pelvis. | Induced. |
| 55 | June 27, 1894 | Prof. Henry J. Garrigues. | New York. | St. Mark's Hospital. | 29 | 2 | Soft tumor in recto-vaginal wall. | 13 hrs. |
| 56 | July 19, 1894 | Dr. T. E. Schumpert. | Shreveport, La. | Private. | 30 | ... | Slightly contracted pelvis and large head. | 62 hrs. |
| 57 | July 31, 1894 | Dr. George W. Jarman. | New York. | Blackwell's Island Hosp. | 22 | 2 | Justo-minor pelvis. | 4 hrs. |
| 58 | Aug. 8, 1894 | Dr. Richard C. Norris. | Philadelphia. | Preston Retreat. | 30 | 3 | Flat, rachitic pelvis. | 6½ hrs. |
| 59 | Aug. 21, 1894 | Dr. Frank D. Gray. | Jersey City. | Christ Hosp. | 27 | 3 | Flat pelvis. | 18 hrs. |
| 60 | Sept. 5, 1894 | Dr. Henry C. Coe. | New York. | New York Maternity Hospital. | 40 | 3 | Contracted pelvis. | 24 hrs. |
| 61 | Sept. 20, 1894 | Prof. Malcolm L. Harris. | Chicago. | Private. | 28 | 1 | Small, oblique pelvis. | 16 hrs. |
| 62 | Sept. 24, 1894 | Dr. J. Clifton Edgar. | New York. | Private. | 35 | 4 | Transversely narrowed pelvis. | 9 hrs. |
| 63 | Oct. 10, 1894 | Dr. Henry C. Coe. | New York. | New York Maternity Hospital. | 29 | 2 | Flat pelvis. | ½ hr. |
| 64 | Oct. 23, 1894 | Dr. Leonard Wheeler. | Worcester, Mass. | Worcester Hospital Maternity. | 28 | 7 | Contracted pelvis. | 10 hrs. |
| 65 | Oct. 26, 1894 | Dr. Henry McM. Painter. | New York. | Out-patient service, Lying-in Hospital. | 19 | 1 | Flat, rachitic pelvis; right lateral obliquely. | 15 hrs. |
| 66 | Nov. 6, 1894 | Prof. Robert A. Murray. | New York. | New York Maternity Hospital. | 27 | 1 | Generally contracted pelvis. | 14½ hrs. |
| 67 | Dec. 8, 1894 | Prof. Bart. Cooke Hirst. | Philadelphia. | Maternity of Univ. of Pa. | 30 | 1 | Moderately contracted pelvis and slightly enlarged head. | 20 hrs. |
| 68 | Jan. 4, 1895 | Dr. Thomas R. Savage. | New York. | Private. | 24 | 3 | Funnel-shaped pelvis. | 24 hrs. labor induced. |

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| C. V. diameter. | Part presenting. | Aid to delivery | Result to woman. | Result to child. | Sex of chd. | Weight of child. | B. P. diameter. | References. |
|---|---|---|---|---|---|---|---|---|
| 3 1/8 in. | L.O.A. | Forceps. | Recov. | Lived. | M. | 9¾ lbs | 3¾ in. | Communicated by the operator. |
| 2¾ in. to 3 in. | R.O.A. | Forceps. | Recov. | Lived. | M. | 10 lbs. | Long. | Amer. Journ. Obst., Dec., 1894, pp. 765, 766. Communication of operator, Dec. 21, 1894. |
| 3½ in. | L.O.A. | Version. | Recov. | Lived. | M. | 8¼ lbs. | 4¼ in. | Communicated by the operator. |
| Normal. | Vertex. | Forceps. | Recov. | Lived. | F. | 10¼ lbs. | ? | Communicated by the operator. New York Med. Rec., Nov. 10, 1894, pp. 577–580. |
| 3⅞ in. | L.O.A. | Forceps | Died on 5th dy. | Dead; destroyed by forceps. | M. | 14 lbs. | ? | New Orleans Med. and Surg. Journ., May, 1895; pp. 788–792. Communicated, May 17, 1895. |
| ? | L.O.A. | Version. | Recov. | Lived. | M. | 6 11/16 lbs. | 3½ in. | Communicated by the operator. |
| 3¼ in. | L.O.A. | Forceps. | Recov. | Lived. | M. | 7¼ lbs. | 3½ in. | Communicated by the operator. |
| ? | L.O.P. | Forceps. | Recov. | Died in 6 hours, fract. os occipit. | M. | 10½ lbs. | ? | New York Med. Rec., May 18, 1895, p. 617. Communicated by Dr. Joseph M. Rector, May 20, 1895. |
| 3¼ in. | L.O.P. | Version. | Recov. | Died in 6 days, pneumonia. | M. | 8¾ lbs. | ? | Communicated by the operator. Oct. 12, 1894. |
| 2¾ in. | L.O.P. | Forceps. | Recov. | Lived. | F. | 8 lbs. | ? | Amer. Journ. of Obst., Dec. 1894, pp. 766, 767. Communicated by the operator, Dec. 21, 1894. |
| 4 in. | Vertex. | Version. | Recov. | Lived. | F. | 8 lbs. | 3¾ in. | Communicated by the operator, April 22, 1895. |
| 3½ in. | Vertex. | Version. | Recov. | Died in ½ hour. | M. | 6 14/16 lbs. | ? | Communicated by the operator, Nov. 10, 1894. |
| 3¼ in. | L.O.A. | Forceps. | Recov. | Lived. | M. | 8 10/16 lbs. | 4 in. | Boston Med. and Surg. Journ., 1894, cxxxi. p. 637. Communicated by operator, Dec. 4, 1894. |
| 3¼ in. | Vertex. | Version. | Recov. | Lived. | M. | 8½ lbs. | 3¾ in. | Communicated by the operator, Dec. 7, 1894. |
| C. D. 3¾ in. | L.O.A. | Forceps. | Recov. | Lived. | M. | 6 14/16 lbs. | 4¼ in. | Communicated by the operator, Dec. 14, 1894. |
| C. V. 3¾ in. | R.O.A. | Craniotomy, hydroceph. | Recov. | Dead; craniotomy. | F. | 9½ lbs. | 4⅛ in. | Communicated by the operator, Jan. 12, 1895. |
| 4½ in. estimated. | L.O.A. | Forceps. | Recov. | Lived. | F. | 6¾ lbs. | 3½ in. | Communicated by the operator, May 14, 1895. |

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| No. | Date. | Operator. | Locality. | Hospital or private. | Age | No. of pr'g | Cause of difficulty. | Time in labor. |
|---|---|---|---|---|---|---|---|---|
| 69 | Jan. 25, 1895 | Dr. J. Clifton Edgar. | New York. | Private. | 25 | 1 | Funnel shaped pelvis; contracted outlet. | 64 hrs. |
| 70 | Feb. 20, 1895 | Dr. Edward P. Davis. | Philadelphia. | Polyclinic Hospital. | 27 | 1 | Justo-minor pelvis. | At intervals for a week. |
| 71 | Mar. 24, 1895 | Dr. Daniel Longaker. | Philadelphia. | Private (Case 24, second operation). | 32 | 5 | Flat pelvis. | 15 hrs. |
| 72 | Mar. 28, 1895 | Dr. J. Richard Taylor. | Sag Harbor, N. Y., on Shelter Island. | Private. | 27 | 1 | Flat pelvis, œdema of vagina and vulva. | 62 hrs. |
| 73 | Mar. 29, 1895 | Prof. Bart. Cooke Hirst. | Philadelphia. | Private. | 33 | 4 | Generally contracted pelvis. | 4 days. |
| 74 | Apr. 16, 1895 | Prof. William T. Lusk. | New York. | New York Infant Asylum. | 19 | 1 | Rachitic pelvis. | 19 hrs. |

SYMPHYSEOTOMIES

| No. | Date. | Operator. | Locality. | Hospital or private. | Age | No. of pr'g | Cause of difficulty. | Time in labor. |
|---|---|---|---|---|---|---|---|---|
| 1 | Dec. 6, 1892 | Dr. J. Anderson Springle. | Montreal. | Private. | 25 | 1 | Contracted pelvis. | 24 hrs. |
| 2 | May 2, 1893 | Prof. J. Chalmers Cameron. | Montreal. | Montreal Maternity. | 20 | 1 | Rachitic pelvis; dwarf, 4 ft. 6½ in. | 14 hrs. |
| 3 | June 30, 1893 | Dr. J. H. Burns and Dr. A. B. Atherton. | Toronto. | Private | 34 | 1 | Small pelvis; dwarf, 4 ft. 6 in. | 33 hrs. |
| 4 | July 26, 1894 | Prof. J. Chalmers Cameron. | Montreal. | Montreal Maternity. | 23 | 1 | Flat, rachitic pelvis; eclampsia; 19 convulsions. | 13¼ hrs. |
| 5 | Oct. 10, 1894 | Dr. C. P. Sylvester. | Toronto. | Grace Hospital. | 27 | 3 | Contracted pelvis, | Morn. to midnight. |

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| C. V. diameter. | Part presenting. | Aid to delivery | Result to woman. | Result to child. | Sex of chd. | Weight of child. | B. P. diameter. | References. |
|---|---|---|---|---|---|---|---|---|
| ? | Brow. | Version. | Recov. | Lived. | F. | 8 lbs. | 3½ in. | Communicated by the operator, March 4, 1895. |
| 3⅝ in. | Vertex. | Forceps. | Died on 4th day. | Lived. | M. | ? | 4 3/16 in. | Communicated by the operator, April 19, 1895. |
| 3 in. | R.O.I. | Forceps. | Recov. | Lived. | M. | 7 lbs. + | 3 15/16 in. | Communicated by the operator, April 14, 1895. |
| 3⅝ in. | L.O.A. | Forceps. | Recov. | Dead before operat'n | F. | 7 15/16 lbs. | 3¼ in. | Communicated by the operator, May 13, 1895. |
| 3½ in. | R.O P. | Forceps. | Recov. | Lived. | M. | 7½ lbs. | 3¾ in. | Communicated by the operator, April 15, 1895. |
| 3¼ in. | Head. | Forceps. | Died on 7th day. | Lived. | F. | 8 lbs. | ? | Communicated by the operator, May 4, 1895. |

OF CANADA.

| C. V. diameter. | Part presenting. | Aid to delivery | Result to woman. | Result to child. | Sex of chd. | Weight of child. | B. P. diameter. | References. |
|---|---|---|---|---|---|---|---|---|
| 3 in. | R.O.A. | Forceps. | Recov. | Lived. | F. | 7¼ lbs. | 3¾ in. | Montreal Med. Journ., Jan. 1893. Communicated April 2, 1893, and Dec. 1, 1894. |
| 2 9/16 in. | L.O.A. | Forceps. | Recov. | Lived. | F. | 7½ lbs. | 3⅝ in. | Communicated May 10, 1893. |
| 3 in. | L.O.A. | Forceps. | Recov. | Lived. | F. | 7 lbs. 9 oz. | ? | Dominion Med. Monthly, July, 1893, pp. 1, 2. Communication of Nov. 26, 1894. |
| 2¾ in. | L.O.A. | Forceps. | Recov. | Lived. | M. | 7 lbs. 4 oz. | 3⅜ in. | Communicated Aug. 8 and Dec. 1, 1894. |
| 2¼ in. | Vertex | Forceps. | Recov. | Lived. | M. | 8 lbs. | 3⅛ in. | Canadian Practitioner, Feb. 1895, pp. 92-98. |

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Canada is to be commended for her progressive spirit and congratulated upon her success; the operation of Dr. Springle followed, as the sixth, after reading of my paper in Brooklyn. The union of the woman's symphysis gave him some anxiety, as the new intervening tissue admitted of a mobility of three-eighths of an inch when alternately standing on one foot; but did not materially affect her locomotion. Such a result is uncommon where the pelvis is well secured and the patient obedient to the orders to keep still. The first woman operated upon in Philadelphia went back to Germany with her baby in two months. Her case was the first one reported in the United States, and at the time of the operation was thought to be the first in the country. Prof. Hirst has now operated six times without a maternal death, four of the cases being in two maternities and two in private practice; his first case was reported in twelve days after he operated, and had much to do with the introduction of the method. Prof. Charles Jewett antedated him in his operation by four days, and stood at the head of the American list as a symphyseotomist until Dr. Williams reported his three cases. Dr. Coggin was also a claimant for priority; but is no longer credited as an operator either in Alabama or Georgia, where he has been located. Personal statements from Athens have decided me to erase his name. This is the second report that I have felt obliged to drop from my tabular record for want of positive evidence as to credibility; there is no reason to discredit any one of the remaining seventy-four.

The Present Status of Symphyseotomy. This mode of delivery is unquestionably now an established one in a number of countries, and has met with decided favor in some parts of the United States. Its chief centres are Paris, Leipsic, New York, and Philadelphia. It was never very largely performed in Naples, ranging from six to twelve times a year, and has recently fallen off quite perceptibly. It has never become a favorite in Milan or Florence, although pelvic deformities overcome by craniotomy are quite common, and in

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former days led to many Cæsarean sections, particularly in Milan, which were almost uniformly fatal. There appears to be a feeling of rivalry against the operation that has given so much credit to Morisani and in favor of that which bears the name of Porro, of Pavian fame. There have been twenty-three symphyseotomies performed in Philadelphia and twenty-one in New York City, with four deaths in the former and two in the latter. Five children were lost in Philadelphia and three in New York. The surgery of symphyseotomy has much less to do with the death of the woman than the obstetrical manipulations that precede and follow it. This has certainly been the experience of our country, as shown by Cases XII., XVII., XXXIX., and LVI.

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# LATE INFECTION IN THE PUERPERAL STATE.

## Being a Plea for the Routine Manual Examination of the Interior of the Uterus after the Completion of the Third Stage of Labor.

By Egbert H. Grandin, M.D.,
*New York.*

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As a preface to the remarks I desire to make in regard to that interesting and frequently obscure topic, late infection in the puerperal state, I append in abstract the salient points in the history of a number of cases which have recently come under my observation.

Case I.—This case was seen in consultation on the twelfth day after delivery. The woman was a primipara in the better walks of life, and both as regards the medical attendant and the nurse had had the best care that could be obtained. The labor had lasted about fifteen hours and the woman had practically delivered herself. The pelvic floor was practically uninjured and the course of the puerperium up to the twelfth day was in every respect normal. On the evening of this day the patient had a slight chill associated with rise of temperature to 101°. This was the first rise during the puerperal state. The next morning the temperature was 99°, but the woman was listless, had lost her appetite, and the husband, becoming alarmed, requested a consultation. I was selected, and I saw the woman in the afternoon. The temperature was then 101°; the abdomen was soft and

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offered no special point of tenderness; there was a slight reddish discharge from the vagina, absolutely inodorous. I examined the woman carefully and was unable to detect anything abnormal, except a larger uterus than it is customary to find at this late date in the puerperium, as also more patency of the cervical canal. These factors are, however, purely relative and hardly influenced me in the advice which I gave, which was exploration of the uterus. I gave this advice, although assured by the physician in attendance that the third stage of labor had been completed after a normal fashion. Under complete asepsis the cervical canal was dilated sufficiently to enable me to insert an ordinary oval curette, and a piece of membrane the size of a silver dollar was removed. The uterus was washed out with creolin solution and a strip of gauze was carried to the fundus. This was removed the following day and the constitutional disturbance was ended.

CASE II.—This case was seen in consultation on the fourteenth day after normal delivery. The woman was also in the better walks of life, and I was familiar with the capability both of the physician who attended her and of the nurse. The course of the puerperium had been normal in every respect and the woman was out of bed, the physician having practically discharged her. She had a chill on the afternoon of the fourteenth day, followed by rise of temperature to 102°. I saw her that evening and found everything normal except a larger uterus than it is customary to find at this date of delivery. The cervical canal was open to the tip of the finger and there was a stale odor to the slight lochial discharge. I advised immediate exploration of the uterus, and we removed a piece of placenta about three inches square, although the physician had carefully examined the placenta on delivery and had found it intact. This woman's constitutional symptoms were also promptly checked by the curetting, or rather by the removal of the cause.

CASE III.—This case was seen in consultation on the tenth day after delivery at term. The labor had been terminated artificially and the pelvic floor had been damaged, but this lesion had been at once repaired. The stitches had been removed on the seventh day and good union had been secured. The course

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of the puerperium was normal up to the evening of the ninth day, when the woman had a sharp hemorrhage which was checked by the hot intra-uterine douche. The next morning I was requested to see her, as there was a rise of temperature to 102°, this being the first rise since delivery. The size of the uterus again attracted my attention, and on examination of its interior I found a piece of placenta with a decidedly necrotic odor adherent at the left cornu. This was removed and the uterus was irrigated with bichloride solution, after which it was packed with gauze. The next day the woman had no temperature; there was no odor to the vaginal dressing, so the gauze was removed and the uterus was again washed out with bichloride solution. The woman had no further trouble.

CASE IV.—This case occurred in my private practice. The woman was a multipara whom I had attended in her previous confinement. There was nothing of note about the labor, which was spontaneous. The placenta and the membranes were intact and practically delivered themselves. The course of the puerperium was absolutely afebrile. The woman was allowed to arise from her bed on the eleventh day, and on the fourteenth I called to discharge her. I then examined her and found the uterus larger than it should have been, but I laid no stress on this because this woman had always had a large uterus since I first made her acquaintance. Two days afterward, that is to say, on the sixteenth day after delivery, I was sent for in the evening because the woman had had a chill. I could not reach her until the following morning, when I was told that a neighboring physician had been called in and had pronounced the case one of malaria and had ordered large doses of quinine. Notwithstanding this medication my patient looked badly and felt decidedly so, her temperature being 101° and her pulse 120. Being skeptical about the malaria, I returned in the afternoon and carefully explored the interior of the uterus. To my great surprise I removed a large piece of membrane the size of a goose egg and a material which looked very much like placental tissue, but which was thrown away before I had a chance to investigate it. The woman was mildly septic for a few days, but then convalesced rapidly, and today enjoys excellent health.

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I could multiply instances which I have seen of this character, but sufficient is on record to enable me to present certain conclusions which have been forced upon me and to advocate a different, or rather a somewhat more radical, method of completing the third stage of labor than is customary.

It is the accepted view to-day that, barring very exceptional instances, septic infection in the puerperal state is the result of faulty technique. The recognition of this view has to a greater extent than anything else led to improvement in our mortality and morbidity rates. It is not the antiseptic agent which is used, it is not the kind of occlusion-pad which is applied post-partum, which secures for our patients the uniformly afebrile convalescences which have become the rule in hospitals as well as in private practice. Without entering into unnecessary explanations, sufficient here the statement that our results are due to the recognition of the fact that the lying-in woman should not be allowed to exhaust herself in the attempt to accomplish the impossible; that is to say, we watch more carefully in order to assist nature when she gives evidence of inability to deliver unaided, and, above all, we exercise the most scrupulous care to keep from the woman in labor those elements of infection which were responsible for the disgraceful mortality of the past. And yet, as is evidenced by the cases which I have outlined above, every now and then instances crop up where, notwithstanding all our faithful care and scrupulous cleanliness, septic infection sets in, and this, too, at a late date, when ordinarily the woman is supposed to be free from the risk of any untoward occurrence. The course of labor is conducted aseptically; the puerpera is properly cared for during the puerperium after skilled attendants have thoroughly satisfied themselves that the act of delivery has been complete, as regards the absolute emptying of the uterus. Notwithstanding all this the phenomena of septic infection set in, and that speedy and careful investigation which modern methods of obstetric practice require reveal the source of infec-



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tion to be a portion of membrane, or even of placenta. How can this be avoided is the question which I propose to discuss here.

For ten years I have been contending that the act of labor should not be considered as having been completed until the uterus has been entirely cleansed of placenta and of membrane, even though these be present only in shreds. This contention has been repeatedly criticised by colleagues, and the assertion, true in the abstract, has been made that these remnants will be shed in the lochia, and rarely, if ever, do damage. My teaching, however, all along has been that, if there were a reasonable doubt as to the integrity of the membranes or placenta, the proper course to pursue was to insert the hand into the uterus, since, while freely willing to grant that these remnants might not do harm, they occasionally did—indeed, might always be the source of future damage—and that it was a far easier matter to investigate the interior of the uterus immediately after labor than to have the procedure forced upon us later in the presence of a greater or less degree of septic infection. Our duty, furthermore, does not end with the puerperal state, but concerns also the future of the woman we have confined, and her remote health too frequently is imperilled by careless obstetrics. The cases which I have related, and others of a similar nature which I have seen, lead me to even more radical action and teaching, and I bring the argument before you, a body of men who are, above all others, competent to criticise to advantage.

It will be noticed that in the class of cases alluded to there has been no reason to question the condition of the interior of the uterus until a late period after labor. As far as could be certified on very careful examination the placenta and the membranes have been properly shed in these cases, and yet, days afterward, portions of one or the other have been removed. My belief is that cases of this character are far from infrequent, and that the remnant often does not give rise to trouble until at a much later period after delivery than in

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those cases of which I have spoken. I question if many cases of fungous endometritis, which are diagnosticated a number of months or years after delivery, be not due to the leaving of particles of placenta or of membranes in the uterus. These particles are not shed in the lochia; they give rise to no constitutional disturbance whilst the woman remains under the care of the man who delivered her, or the disturbance is of such a slight nature as not to attract attention. In course of time an endometritis sets in which shows itself in a leucorrhœal discharge or in hemorrhages. At this late date the woman is curetted and the hyperplasia of the uterus which is found is really due or may be traced to an incomplete termination of the third stage of labor. Possibly before the woman is curetted the tubes and the ovaries and the pelvic peritoneum have become affected, and all as a consequence of a similar cause. The fact must be insisted upon that the vast majority of ills to which woman is heir are due to improper, or careless, or ignorant obstetrics. If, as far as possible, the lesions following childbirth were immediately and carefully repaired; if labor were uniformly conducted with due regard to thorough asepsis; if the third stage of labor were terminated as it should be—with a completely emptied uterus—what would there be left for the gynecologist? Very little, all must admit, and this little would depend on causes aside from the function of reproduction and its sequelæ. During the past active years in our specialties men have been too eager to become gynecologists, and too prone to neglect the far more important branch—obstetrics. Our great aim as obstetricians should be to prevent the development of the vast proportion of the diseases which sooner or later send women to us as gynecologists, and one road toward the achievement of this aim is the measure which I advocate here—the manual examination of the interior of the uterus as a routine measure after the expression or the removal of the placenta. Resort to the measure will render impossible the occurrence of cases such as those

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which I have pictured to you, and in so far will the woman be spared the possible sequelæ.

I have summarized above the cogent reasons which lead me to advocate this measure. The sole objection which may be offered is the fact that it is necessary to insert the hand into the parturient canal after the third stage of labor has been supposedly completed. How far this objection will hold in these days of rigid asepsis I am perfectly willing to leave to your judgment. In mine, the clean hand inserted into the uterus, under conditions when access to its interior is unimpeded, carries no risk to the woman, certainly none comparable to those to which she may be subjected if the uterus has not been cleansed of all remnants.

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# ARTIFICIAL ABORTION.

By Henry J. Garrigues, M.D.,
*New York.*

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To judge by the very frequent applications which I receive from women, married as well as unmarried, for interruption of early pregnancy and the wonderful *sans gêne* with which the request is made, as well as by the coroner cases reported in the public papers, I am inclined to think that this operation is being performed quite frequently and without scientific indications.

Personally I have hurt my business interests very considerably by constantly refusing to perform this operation, except when it was called for on strictly scientific grounds, not only in my mind, but according to the opinion of other competent and sometimes superiorly able judges.

Indications. Different obstetricians differ in their views in regard to the circumstances that call for artificial abortion, and, with some, scientific considerations are being mixed with religious doctrines. The Roman Catholic Church does not allow its adherents to kill the fœtus under any circumstances. From a scientific and humane standpoint the operation may be said to be indicated when on account of narrowness of the genital canal a viable child cannot be born, or when the mother's health is such that it would expose her to death or dangerous sickness to continue in the pregnant state.

The first indication, that based on mechanical obstruction, rarely occurs in this country, where the higher degrees of pelvic deformity are exceedingly rare. Before deciding as to

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the performance of artificial abortion the patient ought also to be told her chances if she waits and is delivered by symphyseotomy or Cæsarean section.

The second indication, that based on disease in the mother, is much more common. Mere unwillingness to increase her family, general nervousness, the dread of the supposed dangers of childbed, the painful reminiscences from previous experience, ought not for a moment to be entertained by a conscientious practitioner. But as soon as well-ascertained facts in her past or the presence of demonstrable serious disease makes it likely that the patient would risk her life or seriously imperil her health by carrying her child to term, it is proper for her physician to recommend a speedy interruption of her pregnancy.

Conditions that justify artificial abortion apart from acute diseases are especially serious pulmonary tuberculosis, severe valvular heart disease, an aneurism of the aorta, carcinoma that is not amenable to radical treatment, chronic nephritis, serious affections of the nerve centres, present or threatened insanity, etc.

In many of the conditions that indicate artificial abortion we should hesitate the less to destroy the fœtus if the condition is such as to make it likely that the fœtus itself may inherit the disease, *e. g.*, tuberculosis, carcinoma, or syphilis.

In my opinion the mere presence of albuminuria is not a valid indication for artificial abortion or induction of premature labor. I have successfully treated numerous cases of this kind with chloride of iron, small doses of chloral hydrate, warm baths, and milk diet even when decided premonitory symptoms of eclampsia, such as headache, cardialgia, vertigo, and dim vision were present. This indication is in my opinion only valid when there is direct danger to life.

Precautions. No one, not even the most experienced obstetrician, should take the responsibility of performing artificial abortion guided by his own judgment alone. The case ought to be submitted to one or more other medical men,

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choosing if possible the consultants in such a way as to obtain the most reliable advice according to the nature of the condition or disease calling for interference—an obstetrician in cases of obstruction in the genital canal, a neurologist in cases of insanity, a syphilologist in cases of syphilis, a man with wide medical experience in cases of kidney disease, etc.

The outcome of the consultation should be put in writing, signed by the consultants, and kept by the man who is to perform the operation. I also take the precaution to acquire the written consent of the husband, if there is one, and of the patient herself. In case of untoward symptoms arising after the operation, or of a fatal issue, these precautions would protect the operator against all the blame that those who have asked for the operation, the friends, and the patient herself, often lay at his door who has only been actuated by the purest instincts of humanity and the most approved scientific doctrines.

MODUS OPERANDI. When artificial abortion has been decided upon, the question arises how it ought to be performed. Most text-books, even of a recent date, give advice which in the writer's opinion is dangerous or inadequate. Even in the latest edition of a justly celebrated work on obstetrics it is recommended to induce abortion by means of a sponge-tent inserted into the cervical canal, a procedure that involves the greatest possible danger of causing septicæmia. Not so bad, but still objectionable, is the advice of others to puncture the ovum through the cervical canal.

I think that we should learn to perform artificial abortion by seeing the results of mismanagement and of good treatment in spontaneous abortions. Abortion offers two dangers—one is hemorrhage, the other is septicæmia. If the uterus is emptied, curetted, washed out with an antiseptic fluid, drained and tamponed in time, both these dangers are avoided.

The same principles ought to guide us in inducing artificial abortion. The patient is anæsthetized, the vagina, vulva and adjacent part of the outer surface are disinfected as for childbirth

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or a gynecological operation. The cervical canal is dilated by means of coniform hard-rubber and expanding steel dilators until there is room enough at least for a curette, but if possible for a finger besides. Not only the fœtus and the ovum, but the spongy endometrium should be removed, the latter forming a mass that easily bleeds and must become disintegrated and to be expelled. It is therefore better to remove it at once. In fact I scrape as long as anything comes out. Before I begin to scrape I wash out the uterus with creolin, and after having finished scraping, I allow a whole quart of a one-per-cent. solution of this drug run through the cavity.

If the uterus is small, say during the first and second months of uterogestation, I do not think that it is necessary to drain. At that period I simply tampon the vagina until the next day, in order to be safe against hemorrhage. When the uterus forms a larger cavity, in which bloody discharge might stagnate, I think it better to pack with iodoform gauze, gradually withdrawing the packing a little every day, so as to give the uterus a chance of contracting well before the last of the packing is removed, from four to six days after the operation. The genitals should be covered with my usual occlusion dressing, and the patient should be kept in bed for a week or two. As long as the packing stays in I only wash the vagina with pledgets of absorbent cotton dipped in creolin emulsion, using a Sims's speculum. After the removal of the drain, vaginal injections are used three times, and later twice a day as long as there is any discharge.

The operation here described can be used until the end of the fourth month. After that time the measures used for induction of premature labor are indicated, especially dilatation of the cervix, introduction of a bougie, and packing of the cervical canal with iodoform gauze.

The method here described offers the advantage that all is done in one sitting, which, however, may last one or two hours.

In order to facilitate the rapid dilatation of the cervical canal, I have had a series of ten olives made of hard rubber

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and adapted to an S-shaped handle. They range from No. 22 to 45 of the American scale, filling the gap between the two sets of Hanks's dilators.

This method has been followed with complete success in the following four cases:

CASE I.—Mrs. H., American, aged twenty-four years, pregnant for the first time, was sent to me by one of the most prominent syphilologists of the country, who expressed it as his opinion that the pregnancy ought to be interrupted. It was in many respects a sad case. The husband, while away from home, had illicit connection, contracted syphilis without knowing it, and after his return communicated the disease to his wife. When I saw them, he had been sick a little over a year, she a little less than a year. The anti-syphilitic treatment had told much on her. She was anæmic and weak. Here, then, was a mother suffering from florid syphilis, with a constitution undermined by the disease and the treatment instituted for it, and, furthermore, there was a fœtus of one month doomed to be born with hereditary syphilis, unless, what is more likely, nature interrupted pregnancy at a later stage. It was known that the pregnancy dated from November 30th, and I saw her a month later.

Under the circumstances I found the operation indicated. I secured the assistance of yet another doctor. We declared ourselves all three unanimously in favor of the performance of the operation. I obtained the written consent of husband and wife, and the operation was performed on January 1, 1891. The cervix was dilated with Hanks's coniform and my own expanding dilators, the whole interior of the uterine body was curetted with Simon's sharp spoon, bringing away not only the ovum but the decidua. The fœtus was not seen. An intra-uterine douche of a one per cent. creolin emulsion was given and the vagina tamponed.

The next morning the tampon was removed and my perineal occlusion dressing applied.

The creolin causing a smarting sensation was replaced by a two per cent. solution of carbolic acid repeated three times a day the first four days, and thereafter only twice a day. There was

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very little discharge. Some soreness in the right side of the pelvis yielded to a hot-water bag and suppositories with one-third of a grain of morphine morning and evening. The temperature never rose above 99.8° F. nor the pulse above 100. She was kept in bed for a week. On the ninth day she was allowed to take a ride in a carriage, and on the twelfth day I saw her for the last time.

CASE II.—Miss H., American, aged twenty years, first pregnancy. This patient was taken with repeated chills, had a temperature of 102° F., and lost some blood *per vaginam*. She denied the possibility of pregnancy. I was called in consultation by the family physician on May 7, 1894. Physical examination showed a pregnancy at the end of two months; cervix closed. I diagnosticated the condition as one of septicæmia, gave a very doubtful prognosis, and advised artificial abortion as a life-saving operation. A third physician was called in to help us.

The case was treated in a similar manner to that employed in the preceding one, the only difference being that the fœtus was removed first, then the ovum and the decidua.

The temperature fell to 101° F. the same evening, and to 100° F. the next day, and it was normal thereafter. At the end of a week she was well.

CASE III.—Mrs. B., American, aged twenty-four years, mother of two children, respectively four and two and a half years old. I was her accoucheur on both occasions. The first time she was very seriously ill with nephritis; the second childbirth was followed by insanity, for which she was treated several months in a lunatic asylum, and now she had already developed pronounced melancholia. She suffered also from nausea, vomiting, toothache, and insomnia. She had skipped one menstruation four weeks previously, the uterus was enlarged, anteflexed, and Hegar's sign was present.

I gave a written opinion as to the advisability of performing artificial abortion. This view was concurred in by an eminent neurologist who had treated her during her previous puerperal insanity, and again examined her as to her mental condition in this new pregnancy.

The operation was performed on December 9, 1894, in the

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same way as in the preceding cases. The morning after the operation the patient had a temperature of 100° F. She continued for three weeks to suffer from nausea, for which she was treated with bismuth, hydrocyanic acid, tincture of iodine, oxalate of cerium, and extract of nux vomica. Otherwise she made a speedy and uneventful recovery. She got out of bed on the ninth day. The effect on her mind was striking from the very next day after the operation. She declared that a heavy weight was taken from her brain, she became again cheerful, and has remained in excellent health ever since.

CASE IV.—Mrs. K., American, aged about forty years, mother of five children, about four months pregnant. In this case I had not known the patient before, and could only be guided by the testimony of the two prominent physicians and highly respectable men who knew her previous history. One certified over his signature that she had been constantly suffering throughout all her pregnancies from pain, digestive disturbances, insomnia, etc., and that she now had been sick for the last eighteen months, and that she would be greatly injured physically if the present pregnancy was not interrupted.

The other, an eminent alienist, stated in writing that he had attended Mrs. K. in a medical capacity for over a year; that at the time of his first visit to her, for a long time previous to that, and for a considerable period thereafter, she was mentally and bodily so run down as to be almost constantly dominated by imperative conceptions (a fear of going out alone, etc.). She was in his opinion upon the verge of a neurasthenic psychosis. After weeks of careful treatment she recovered to a certain extent. He declared that fearing that the carrying of the child with its physical and mental effects would throw her back into her former state and probably bring on an attack of insanity, he advised the performance of artificial abortion.

The operation was performed on March 22, 1895. While it had been very easy in the three other cases, it was quite difficult and tedious in this, the internal os offering considerable resistance; the coniform dilators went in easily enough, and my own was expanded to its full capacity (an inch and a quarter). Using the finger and the three smallest olives of Hanks's dilators,

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I finally obtained room enough to introduce one finger and a curett. The fœtus was in cross presentation, with the head in the left side. The liquor amnii poured out, then the cord followed, which I pulled off. Then I could bring down the left foot, then the right. The toes being turned forward, I rotated the body so as to bring the back forward, and delivered the arms. The head tore off and gave a good deal of trouble. Finally, I crushed it with a polypus forceps and succeeded in extracting it. Before that I got the placenta out in one piece with the large, dull wire curette. There was very little hemorrhage. The whole interior of the body of the womb was cleaned with the curette and packed with iodoform gauze. The vagina was tamponed with the same material and absorbent cotton wrung out of creolin emulsion.

The next evening the temperature was 100.4° F.; after that it varied between 98° and 99°. The cotton tampons were removed the next morning, the gauze in the vagina and part of that in the uterus were removed on the third day, the remainder on the fourth day. The first few days the patient had some soreness in the lower part of the abdomen where counter-pressure had caused discoloration of the skin. From the fourth day she felt well. To promote involution she was given fluid extract of ergot (ʒj, t. i. d.), and the pain was soothed by the application of an ice-bag and the administration of a little morphine. She left her bed and dismissed her nurse on the fourteenth day. A few days later she went out, and has since been in good health.

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# PAPERS

PRESENTED TO THE COUNCIL BY THE

## CANDIDATES ELECTED TO FELLOWSHIP

IN THE

# AMERICAN GYNECOLOGICAL SOCIETY,

AT ITS

## TWENTIETH ANNUAL MEETING,

HELD AT

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# RETROPERITONEAL CYSTS.

## Report of an Unclassified Case.

By John Duncan Emmet, M.D.,
*New York.*

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The greatest difficulty encountered in preparing a contribution to this little-known subject has been to decide what should be admitted under this title and what should be excluded. No systematic attempt has been made to properly classify those cases which though literally falling under the generic term "retroperitoneal" from their anatomical situation are, so far as our evidence goes, altogether different in probable cause, mode of origin and histological composition. Such a classification must be extremely faulty, because by its vagueness it merely names but does not indicate, and it might with equal propriety be applied to any kind of cyst—and it has been so applied—of any abdominal organ which is covered anteriorly by peritoneum. But there is on record a small number of cysts bearing a very close relation to one another in the situation of their origin, in their method of growth, their constant relation to neighboring organs, the histological composition of their walls and fluid contents and the ease, for the most part, of their enucleation from their peritoneal covering. For these we have no other name than that of their situation, while all other cysts are also named after the organ from which they take their origin. On this account and because the few writers who have reported these rare cases

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hitherto have so limited the definition, I shall apply the term "retroperitoneal cysts" to this class only.

The literature of this class of cysts is extremely meagre, and but three writers have even recognized their existence as as a distinct variety. After a most thorough search, I find but four who classified them under this name. Köeberlé[1] seems to have been the first to recognize these cysts and to place them in a separate category, founded upon certain essential peculiarities which all observers unite in ascribing to them. In reporting his own case, he thus describes the class: "Serous retroperitoneal cysts are always monolocular; their contents are thin, watery and contain much salts and little albumen. Such patients are usually well-nourished, even if the tumor have reached a considerable size. The cyst walls are very thin and fluctuation very marked. These cysts grow slowly and are easily separated from the abdominal viscera, the attachment to which is usually by a layer of lax connective tissue." This description, with the exception of his reference to their invariably monolocular character, is remarkably in accord, so far as it goes, with that of all other observers. Przewoski,[2] of Warsaw, states that he has seen three such cysts on autopsy and, further, that he has found but four other cases on record, viz.: one each by Mesnet, Klebs, Péan and "Watt." Obalinski,[3] who quotes these names from Przewoski's article in Polish, fails to give the references to their cases, so, unfortunately, I cannot give these here. I cannot find any case reported in the writings of these surgeons which answers to the description of the cysts in question, except in the case of the last one mentioned. After searching throughout the reports from our Surgeon-General's library and the *Index Medicus*, under the head of all kinds of abdominal cysts, and for the name "Watt" (which I presumed was that of some German not of international fame), I at last came

[1] Gallez: Diagnostic des Tumeurs du Ventre, 1893.
[2] Gazeta Lekarska, Warsaw, 1889.
[3] Centralb. f. Gyn., 1892, No. xvi.

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across the report of a case of "Cyst of the Mesocolon," by my friend, Dr. Robert Watts,[1] Consulting Gynecologist to Roosevelt Hospital, in this city. The article was written in 1879 and was evidently the case to which Przewoski referred. Mesnet's case will be found, presumably, in his *Étude des Paralysies Hystériques*, etc., published in Paris, 1852, as this is the only reference I can find to anything he has written, which can even remotely be connected with our subject. As this work, however, is not available to me, I have been unable to verify Przewoski's reference. I have also searched the writings of both Péan and Klebs, but without finding in either a case such as Przewoski describes. It is probable that neither of the latter writers appreciated the distinctive character of these cysts and failed to classify them. Watts also failed to recognize clearly the retroperitoneal character of his cyst. No other cases have been reported as such from the date of Obalinski's paper, 1891, to 1895. The following is a list of all cases reported:

| | |
|---|---|
| Köberlé | 1 |
| Mesnet | 1 |
| Klebs | 1 |
| Péan | 1 |
| Watts | 1 |
| Przewoski (at autopsy) | 8 |
| Obalinski | 1 |
| Stonham (at autopsy) | 1 |
| J. D. Emmet | 1 |

It is probable that a number have been seen but, owing to their situation and adhesions to the intestines, they have been considered and reported as cysts of the mesentery. The great diversity of opinion, as we have seen, in regard to the origin of mesenteric cysts would also lead to this error.

The history of Obalinski's[2] case is as follows:

The patient was fifty-seven years of age and had had nine children. When an abdominal incision was made a tumor as

[1] Amer. Journ. of Obstet., 1879, xii. p. 833.
[2] Wien. klin. Wochenscrift, 1891, No. xxxix.



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large as a man's head was found in the abdominal cavity. Upon incising its peritoneal covering, it was easily shelled out. It originated under the parietal peritoneum over the sight of the right kidney, though this organ could not be found. Microscopical examination of the contents of the cyst showed nothing to indicate origin from either the kidney or the ureter. The fluid was watery, contained 12 per cent. of albumin, was rather poor in phosphates but rich in chlorides. Although he had made a previous diagnosis of hydronephrosis in this case, and although the kidney on the same side was apparently wanting, he believes that the absence of all nephritic elements, both in the cyst wall and its contents, as well as the ease of enucleation, preclude its kidney origin. He claims that this cyst belongs to the class of "retroperitoneal cysts" and places it among those reported by Przewoski and Köeberlé. He agrees with the former that these tumors are of fœtal origin, that they develop from the remains of the Wolffian or Müllerian ducts, and that they find an analogy in the fistulæ and cysts which are believed to have developed from the remains of the branchial arch. As a result of his study of the cases reported, he offers the following conclusions: 1. They are not so rare as is generally supposed. 2. They are equally frequent in both sexes. 3. They seldom attain to a great size. 4. They are generally situated in the region of the kidney and spring probably from the fœtal elements in that neighborhood. 5. The first apparent symptom is the appreciation of the presence of the tumor. 6. Removal is easy, because the wall, though thin, is tough and because the cyst is generally connected with neighboring organs—peritoneum, intestines, etc.—by an especially loose connective tissue. 7. Their contents are serous but very poor in solid ingredients. 8. Although repeated puncture would, he believes, cure the patient still, on account of the annoyance from the size of the tumor, and in view of the ease and innocuousness of excision, it should always be done.

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HISTORY OF DR. WATTS'S CASE.

The patient, aged thirty-eight years, had had four children. Her previous health had always been excellent. After the birth of her first child, ten years ago, she noticed a soft, oblong swelling, about six by two inches, in the median line, between the symphysis pubis and the umbilicus, though not perceptible to the eye. It was freely movable, neither painful nor tender and did not increase in size. Two months after the birth of her last child, about sixteen months ago, she observed a hard, round tumor, also in the median line and projecting above the symphysis pubis.

This tumor steadily increased in size and displaced the soft mass to the left. It was not painful except under pressure. She had lost flesh for the past year, and had suffered from interference with the digestive functions. Urinary analysis shows no kidney trouble. On physical examination the abdomen is felt to be occupied by "a spherical tumor, which is elastic and fluctuating, with very tense walls. There is dulness on percussion over the tumor, while above it and in both flanks there is resonance. The tumor is very movable. The skin over it is so relaxed it can be lifted up in large folds, and the tumor can apparently be lifted out of the abdomen by the hands pressing underneath it. On the left side of the cyst is the soft lump mentioned by the patient, which is evidently a portion of the intestine, probably the colon. The tumor was made out to be unconnected with the uterus, which seems healthy and of normal size." The diagnosis made was cyst of the ovary. The operation was performed on May 4, 1878, and is thus described: "An incision was made through the skin in the median line, when there was found to be no opening in the linea alba, but simply an extreme thinning of the tendon. After dividing the peritoneum the tumor was exposed and was found lying between the layers of the mesocolon, the descending colon lying upon its left side and attached to it by

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the posterior surface. By the advice of my colleagues, I proceeded to enucleate the tumor from its position between the layers of the mesocolon, it being the opinion that the cyst was one of the left ovary, which had developed in an unusual direction behind the peritoneum. The peritoneal covering to the left side of the attached colon was divided, and the cyst was removed entire by stripping off the investing layer of the mesocolon. There was no pedicle whatever." The ovaries were found to be in their normal position and healthy. This patient died, presumably of sepsis, on the sixth day. On autopsy "a large cavity was found extending behind the descending colon and sigmoid flexure upward to the lower border of the left kidney and forward and inward to the line of incision of the abdominal walls. It was twelve inches in length, and its walls were formed posteriorly by thickening of the loose sub-peritoneal connective tissue and lumbar fascia, externally and internally by layers of the mesocolon; anteriorly by the colon and mesocolon. The cavity was partially filled with rather recent coagula of fibrine. The fluid contained in the sac was reported by Dr. Delafield to be clear serum."

The extreme difficulty of diagnosis in this case is evident, and there would have been no question of its origin from the mesocolon had the autopsy not shown that it sprang from behind the parietal peritoneum and had become partially enveloped by the folds of the mesocolon, which simulated an interperitoneal origin.

The following case bears such a close resemblance, except in the matter of its origin from the pelvic tissue instead of the para-nephritic, to the cysts of this class, that I have placed it among them.

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## REPORT OF DR. STONHAM'S CASE OF RETROPERITONEAL CYST.[1]

The specimen was found in a male subject brought to the dissecting-room of University College. It was situated close to the right internal abdominal ring and was hanging down in the pelvic cavity. The attached end of the cyst is in the sub-peritoneal tissue. The cyst was partially collapsed and contained blood-stained serum, the staining being probably due to post-mortem changes.

The cyst measured six and three-quarter inches in length and about three inches in its broadest part. Close to the peritoneum the neck is about one-quarter of an inch broad, but the part situated in the sub-peritoneal tissue is about one-half inch across. The wall is about the thickness of tissue paper, except that part under the peritoneum which is about one-twentieth of an inch thick. It is capable of containing about eleven ounces of fluid.

The attached end is situated in the sub-peritoneal tissue, and the cyst projects through a round opening about three-sixteenths of an inch in diameter in the peritoneum, being attached to the margins. The thickness of the neck is due to overgrowth of the connective tissue.

The piece of cyst wall stained showed a very delicate network of connective tissue containing in its meshes many nucleated cells of various shapes, but generally rounded or fusiform, scattered irregularly. There is no evidence of an epithelial layer on this surface. The wall of the neck of the sac beneath the peritoneum consists of fibrous tissue, surrounded on the outer surface by delicate connective tissue. No evidence of epithelium on either side. Probable origin of the cyst: sub-peritoneal tissue, and by the projection of the cyst into the abdominal cavity the overlying portion of the peri-

[1] "Cyst of the Peritoneum," Trans. Path. Soc., Lond., xxxix. p. 49.

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toneum was absorbed, which would account for the absence of epithelium.

A very curious and suggestive analogy exists between retroperitoneal cysts, such as I have described, and the solid tumors (lipoma or myxo-lipoma) found in the same region. Vander Veer, in a paper on these tumors entitled "Retroperitoneal Tumors: Their Anatomical Relations, Pathology, Diagnosis, and Treatment,"[1] has the following: "A careful study of retroperitoneal tumors shows them to be of a mixed variety, containing the elements both of lipoma and myxoma—tissues which are, histologically, very closely associated. Fat is developed from embryonal mucin, and in post-fœtal life occupies those spaces in the economy which later in the fœtus are of myxomatous elements. Again, in the retroperitoneum both of these tissues are found, and, doubtless, many of these growths arise, under suitable conditions, from congenital neoplasms. . . . They are sometimes active in their growth, often become cystic, and reach immense proportions." I have found a case of the character just described, presenting a most interesting history, with some very unusual elements. I am surprised not to find this reference in the very full bibliography which is appended to Vander Veer's article. As it seems to me to bear an important relation to the subject of retroperitoneal cysts, and as I have not seen it quoted elsewhere, I hope I may be pardoned for presenting here a brief abstract of it.

M. Guillet[2] reports a fatal case of removal of a tumor the size of a man's head. The autopsy revealed the fact that the mass had been connected neither with the kidney nor with the mesentery, but that it occupied the posterior epiploic space. It had lain between the transverse colon, which was pushed down, and the stomach, which was pushed up, to the level of the third portion of the duodenum and the pancreas. Before

[1] "Retroperitoneal Tumors," etc., Amer. Journ. of the Med. Sciences, January, 1892, p. 17.

[2] Progrès Med., 1886, 2s., iv., 908.

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the operation it lay against the vertebral column by the side of the aorta and in front of the kidney, to which it was not attached. It was covered by peritoneum. The tumor looked like a large lipoma, colored, and lobulated. Incision into the fatty mass revealed hard substances, which were true bone; some were very hard and others soft, as though inflated, these latter having in their interior little cysts containing a mucous fluid. In the lower part of the tumor was found a polycystic mass as large as a fist—analogous in appearance to a multilocular ovarian cyst. The writer asks the question: Which of the distinct elements, of which the tumor was composed, was the original one from which the mass sprang? Tillaux considered this to have been osseous, and that later cystic and fatty tissue developed around it. He also believed it to have had a teratological origin, in this regard approaching a dermoid but still differing from it to a certain degree. Péan has reported a similar tumor, which he calls lipoma of the mesentery, in the centre of which he found a calcareous mass.

In reading this case I was struck with its great similarity in situation, relation to the kidney and supposed origin with the retroperitoneal cysts described by Obalinski; in every respect, in fact, save in the contents of the tumor. These, as we have seen, were partly cystic and, if this was due to the breaking down of the fatty elements which, as Virchow[1] has described, occurs in lipomata of the omentum, why should not this process be prolonged indefinitely, until all the solid elements have broken down and the tumor becomes converted into a complete cystoma? Might not these elements be finally replaced by the characteristic serous fluid of true retroperitoneal cysts, found in this situation, and supposed to have a similar origin from prenatal remains? May not this process of metamorphosis be the true explanation of the development of retroperitoneal cysts, and may not the slowness of this process account for the rarity with which they are observed?

[1] Berl. klin. Wochenschrift, 1887, No. xiv.

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While it is not improbable that this suggestion has already been made, I have been unable to find it in regard to this class of cysts.

## The Author's Case.

My own case, which I am now about to relate, bears a marked resemblance to the cysts reported by Obalinski and Przewoski in several particulars, notably in its evident origin retroperitoneally in the neighborhood of the kidney, in the nature of its contents and the character of its walls; yet in other important respects it sets at defiance so completely the rules given us by these authors for the diagnosis of these cysts, it differs so radically from all recorded cases I have been able to find of whatever kind, that, although from its probable fœtal origin and sub-parietal situation I place it under the head of "Retroperitoneal Cysts," I cannot further classify it.

Mrs. H., aged fifty-eight years, had five children and four miscarriages—none over three months. Menopause occurred at fifty-four. Had always been in good health until two years ago, when she noticed a swelling in the lower part of the abdomen, which gradually increased in size until the present time. The symptoms which accompanied this swelling were sour stomach and regurgitation of food, obstinate constipation and palpitation of the heart at times. She thinks her urine has been scanty of late.

*Urinary analysis:* Color, yellow; reaction, acid; specific gravity, 1010; albumin, none; only squamous epithelium and little urates found.

When I first saw this patient, a few weeks before the operation, the abdomen was greatly distended and uniformly enlarged. Her general appearance, her face as well as the surface of the belly, was what has been called "typically ovarian." I made the diagnosis of simple ovarian cyst. Patient had never been tapped.

The operation was performed on June 3, 1893, with a median incision. The abdominal walls were thin, and the tumor im-

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pinged so closely upon them that it seemed difficult to avoid incising it through the parietal peritoneum. When the abdomen was opened, I passed my hand over the surface of the cyst for three or four inches in every direction to discover whether any adhesions existed in the neighborhood of the abdominal opening. The tumor filled the cavity so tensely that it was with difficulty I could insert even my fingers. The face of the cyst was smooth and pale and presented more the appearance of a parovarian than of an ovarian cystoma. I still believed that I had a very simple case to deal with and, plunging a trocar into the presenting portion, I turned the patient on the side. As the cyst emptied itself of a clear, light-brown, watery fluid, I dragged it by means of forceps slowly through the abdominal incision. After I had drawn out several inches of the sac, I found it impossible to proceed further and, believing the resistance to be due to a multilocular condition, I enlarged the sac opening, inserted my hand and attempted to break these secondary cysts into the main cavity. I succeeded in doing this with one, but the greater part of the mass, which extended apparently far above the umbilicus, resisted all my efforts. I could feel the adhesions of the tumor through its walls apparently on all sides. I therefore secured the opening with long forceps, extended my abdominal incision nearly to the ensiform and made a manual exploration along the outer surface of the sac. Several gallons of fluid had now been withdrawn, and I was enabled to pass my arm as far as the elbow into the abdomen. This seemed to be completely filled by the cyst, which formed an unbroken line from the diaphragm to the brim of the pelvis and from flank to flank. I was unable, probably from the size and weight of the mass, as well as from the general displacement of the viscera to which it was attached, to pass my fingers under the rounded edge of the tumor anywhere in its long diameter on either side. I therefore believed it to be attached to the posterior wall of the abdomen on both sides throughout its length, as well as above and below. No viscus was to be felt or seen in the abdominal cavity outside the tumor, except the liver, which was much displaced to the left side. What I took to be the transverse colon lay transversely across the brim of the pelvis and was firmly united to the lower border

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of the cyst. The small intestines were crowded into the pelvis upon and behind the uterus and its appendages, all of which were, apparently, normal and connected in no way with the tumor. Imbedded in the tumor mass on the left side, and nearer its upper surface, I felt a hard oblong body, which I recognized as a kidney. Below this, and nearer the diaphragm, I felt a large sac-like mass, apparently part of the tumor; but its partially collapsed condition and the peculiar mobility of its fluid contents under pressure, as well as the greater thickness of its walls, convinced me that it was the displaced stomach.

I stitched the walls of the sac to the abdominal wound for drainage, packed the cavity of the cyst with iodoform gauze, and closed the rest of the parietal wound with silkworm-gut sutures.

The patient rallied fairly well from the immediate effects of the operation, but her pulse remained weak and rapid. Six days later—June 9th—she died. During this interval the sac drained well, and there were no marked symptoms of general peritonitis.

The following is the report of the autopsy:

*Autopsy, June 9, 1893.* Body poorly nourished. Rigor mortis not well marked. *Lungs:* normal. *Heart:* left ventricle, slight hypertrophy; mitral valves thickened and edges irregular. *Aorta:* small patch of atheroma in the posterior wall. *Kidneys:* normal.

*Abdominal cavity:* Operation wound in the median line of the anterior abdominal wall, in the upper end of which is stitched the wall of a cyst. Peritonitis in the region of the abdominal wound. The entire right side of the cavity is occupied by a large cyst, which has crowded all the organs over to the left side. The liver, normal in size, is pushed to the left for about four inches, its left lobe being entirely in the left hypochondriac region. The stomach, which is very much distended, lies almost entirely in the same region, its cardiac end being pushed upward and backward, the pyloric end being drawn downward. The ascending colon, very much distended, is crowded from its normal position, running obliquely across the lower border of the cyst, to which it is firmly adherent, and disappears under the lower

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border of the stomach. The transverse colon is collapsed and crowded up behind the stomach. The descending colon is distended and is in its normal position. The small intestine is distended with gas; some of its upper coils are adherent to the left side of the cyst, the remainder being forced down into the pelvic

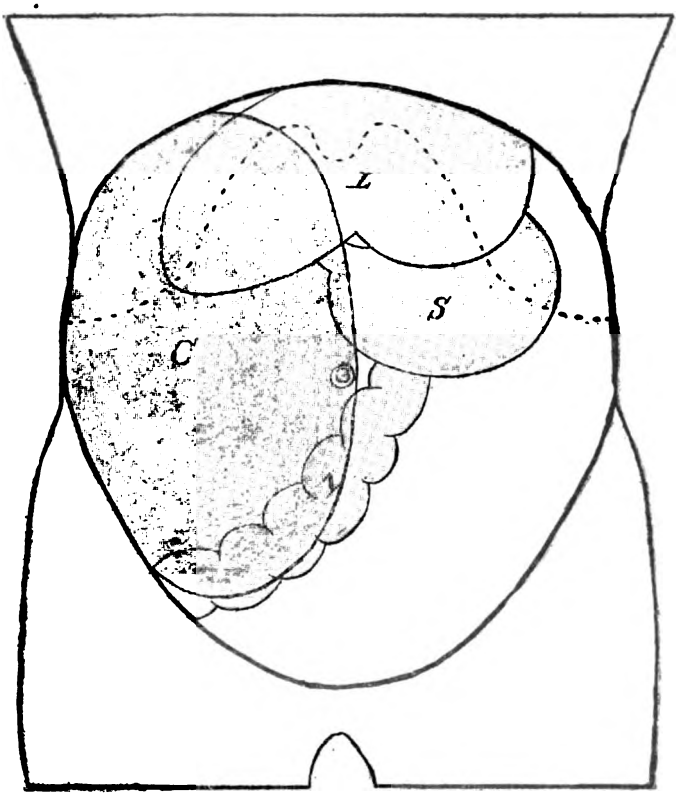


Diagram showing position of cyst at the autopsy.
*C.* Cyst. *L.* Liver. *S.* Stomach. *I.* Ascending colon.

cavity. The cyst, measuring 29 c.cm. in its long and 24 c.cm. in its short diameter, is attached to the under surface of the diaphragm and liver. It is entirely behind the peritoneum, having forced the right kidney forward and to the left of the median line. The kidney and supra-renal capsule are normal in size

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and are firmly adherent to the left side of the cyst. In dissecting away the cyst from its lateral and posterior attachments all of the muscles were laid bare.

The uterus is retroflexed and crowded over to the left. Both ovaries and tubes are attached and are normal in size. There are no evidences of pelvic peritonitis.

*Macroscopic examination of cyst.* The cyst is oval in shape, measuring 29 c.cm. in its long and 24 c.cm. in its short diameter. Its anterior unattached surface is smooth, the remainder rough from adhesions. The adhesions to the under side of the liver are thin and easily broken down, while those to the posterior of the diaphragm are dense. The inferior vena cava passes up on the inner surface of the cyst and is firmly adherent to it. It is normal.

The kidney is normal in size and is attached to the surface of the cyst by loose connective tissue containing considerable fat. The pelvis, ureter and renal vessels are normal.

Section shows the cyst to be multilocular, consisting of one large cyst at the lower end and a collection of small ones at the upper. The wall of the main cyst averages 2 mm. in thickness. The cyst was filled with a thin reddish-brown colored fluid.

*Microscopic examination.* The cyst wall is composed of dense connective tissue, poor in cells, and is lined with a single layer of flat epithelium.

In addition to the above report of the autopsy the pathologist, Dr. George C. Freeborn, who performed it, has very kindly written me the following in this case:

"From the appearance of the cyst I would say that its wall was distinct from the peritoneum. The kidney was adherent to its anterior surface by loose connective tissue, such as normally fastens this organ to abdominal walls. Its adhesions to the diaphragm were so firm that I do not think that enucleation would have been possible. The adhesions to other organs could have been broken down. My idea is that the cyst is of fœtal origin, possibly from remains of Wolffian body."

There were no hydatids found. Pancreas normal.

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The peculiarities of this cyst which, in my opinion, give it the distinctive character to which I have referred in the title of this paper, are:

1. Its removal of the kidney and its attachment to the latter.
2. Its immense size and multilocular character.
3. Its very dense and extensive attachment to the diaphragm.
4. The presence of the vena cava inside the sac, and its firm adherence to the inner surface of the wall.
5. The firm and intimate connection of the peritoneal covering to the cyst wall and the impossibility of enucleation.

I cannot omit to thank Dr. Freeborn for his kindness in preparing for me the post-mortem report of this case, as well as the accompanying diagram, which shows the relations of the cyst, at the post-mortem, to the attached viscera.

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# A FURTHER STUDY OF CERTAIN PHENOMENA OBSERVED IN THE SUDDEN ARREST OF LACTATION, AND IN THE TREATMENT OF INFLAMMATION OF THE NIPPLE AND BREAST BY BANDAGING AND REST.

By Philander A. Harris, M.D.,
*Paterson, N. J.*

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Having long been convinced that the nursing child may be taken from the breast at any stage of the gland's functional activity, and that we may at the same time refrain from every means of withdrawing the secretion without detriment to the mother or child in either the normal or inflammatory conditions of this organ, it has been my custom to bandage the breast, and to enforce rest from nursing for the following conditions:

*First.* After every stillbirth, or sudden death of the nursing child, and in instances in which it was decided that the child's interests would be better subserved by artificial feeding.

*Second.* In every case of mastitis, in which when first seen I was unable to discover the existence of an abscess.

*Third.* In all cases of sore nipples which were not yielding to treatment, but advancing to a condition in which the child was unable to withdraw the secretion, or the mother too sorely pained by its efforts at nursing.

From my obstetrical records of private and hospital maternity practice I find that I have employed bandaging and rest altogether in about eighty-five cases. About thirty of these

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belonged to the first group above referred to, and were consequently treated for the permanent arrest of the functional activity of the glands. The remaining fifty-five patients, with one exception, had living and nursing children, are included in the second and third groups, and consequently presented some grade of inflammation, either of the nipples or breasts, or of both.

In no instance in the first group did inflammation or abscess result. The glands usually attained their maximum degree of distention on the fourth, fifth, or sixth day following delivery, and afterward rapidly softened, shrunk, and returned to a condition of normal inactivity. In about two-thirds of them the secretion drained from the nipples more or less freely during treatment. In the remaining one-third of the cases there was little or no drainage from either breast. In a very few instances, only one side drained during treatment. In all cases the draining was observed to rapidly diminish as the glands softened and shrunk, and almost without exception had entirely ceased before the breasts had resumed their usual size.

As to the results of treatment in the second and third groups, and comprising fifty-five or more cases of inflammatory troubles of the nipples or breasts with nursing children, three patients developed abscess during treatment by bandaging and rest. In one of these the child was re-applied, and a fairly abundant secretion recalled and maintained with advantage and satisfaction to both mother and child.

In one other instance efforts to induce a small and prematurely-born child to nurse resulted in failure, and on the fifth day after birth the greatly distended breasts were both bandaged and rested to effect a cure of inflamed nipples. When the nipples had healed and breasts softened the child was re-applied; it again persistently declined to nurse and had to be fed. It afterward thrived by artificial feeding.

In the remaining fifty-one or more cases the breasts were bandaged for periods varying from four to twenty-four days. Nursing was suspended for periods varying from one to six-

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teen days, and the functions of secretion and nursing afterward fully recalled and maintained with the effect of curing the local inflammation in every instance, and without injurious effects to mother or child.

I have histories showing the more important features of twenty-four of these cases, from which I have arranged the accompanying table to facilitate examination, comparison, and study. Unfortunately the remaining twenty-seven or more cases included in the second and third groups are without sufficient data to entitle them to a place in the table.

Proceeding more particularly to a study of the conditions and changes as they appeared in the twenty-four histories here given, I find that in ten cases bandaging and rest was begun on the third, fourth, or fifth days after delivery; that in five instances it was begun on the sixth, seventh, tenth, or eleventh day after delivery, with an average of about five and three-fourths days for eleven of the cases. In seven cases the apparent necessity for bandaging and rest developed between the fourth and sixteenth weeks after delivery. In the remaining two cases the trouble for which treatment was instituted arose at the fourth and eighth months, respectively, after delivery. In only five instances did chill and fever precede bandaging. In ten instances bandaging and rest were practised for the cure of inflamed nipples alone. Eight cases were treated on account of reddened and inflamed breasts. Only two of these were without sore nipples at the beginning of treatment. Sore nipples had, however, in both cases preceded the mastitis. In only six instances was there present the double condition of an inflamed nipple and a reddened breast when first bandaged.

TEMPERATURE. Unfortunately there appears no record in five of the cases. Four of the five cases without record were examples of inflamed nipples, with distention of the breasts and more or less inability of the child to nurse. The remaining case—No. 1 in the table—had severe pain in the breasts, followed by chill. In four cases no elevation of temperature

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was discovered. Fourteen cases presented febrile movement, attended by a maximum temperature varying from $99\frac{3}{10}°$ to 103°, and probably due to the local inflammation in most instances. Case No. 6 is excluded from consideration here because the high temperature was doubtless the result of an abscess already developed when admitted to the hospital.

DRAINAGE. In eight instances there was no drainage from the nipple. In four there was slight drainage. Twelve drained more or less freely.

SENSORY PHENOMENA. In every instance there was marked relief or entire cessation of pain after bandaging. In two cases anodynes were given for one day. In one case two doses of morphine were given. In three cases a single dose of morphine was given. All the other cases were either free from pain after bandaging or were quite comfortable without anodynes.

THE MAXIMUM DEGREE OF DISTENTION in one instance was attained in twelve hours; in eight instances the first day; in nine instances the second day; and in five the third day, the average time for all cases being less than two days.

THE PERIOD OF REST FROM NURSING. The average period of rest from nursing was about seven and a quarter days. The shortest rest was two days; the longest, sixteen.

The time required to fully recall the function of secretion varied from two to ten days, the average time being six and one-seventh days.

BANDAGING CONTINUED. The average time for the retention of the bandage was thirteen and one-third days. The shortest employment was seven, and the longest twenty-four days.

CONDITION OF THE OTHER NIPPLE AND BREAST. In five cases the other nipple was sore, and both breasts were rested. In four cases the other nipple was sore, but healed during the continuance of nursing. In one case—No. 19—the other nipple became so inflamed that it had to be rested from the date of cure of the breast first attacked. It is entered



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in the table as No. 20. The function of the breast first affected was resumed, while the other nipple was rested until healed. In none of the other cases was there appreciable difficulty or inflammation of the other nipple or breast, excepting in case No. 6 of the table, which entered hospital with an abscess.

THE CHILD. While nursing only from the well breast the child was generally also fed. In one or two of the cases where the young infant was taken from the breast it resumed nursing with great reluctance. The child almost always offered some objection to nursing from a rested breast, but the reluctance was generally easily conquered by a little starvation. In no instance did any child which had nursed before resting positively decline to aid in recalling the secretion.

In the treatment of the inflammation of the nipple and breast by bandaging and rest I have been most forcibly impressed with the general uniformity of results. Pain, discomfort, and temperature generally diminished upon the application of the bandage and the consequent enforcement of rest. Cases which did not drain at all appeared to improve quite as rapidly as the larger number which drained to a greater or less degree. In no instances have I observed in the same lactation a return of the inflammation in the breast after the first attack. I used to fear the child would sicken with the first nursing following rest, but in no instance have I observed this result.

METHOD OF BANDAGING. The six accompanying figures illustrate the method of bandaging. A medium quality of unbleached muslin roller, from 2 to 2½ inches in width, and from 18 to 22 yards in one piece is required.

The patient's comfort may generally be enhanced by placing a light covering of surgeon's cotton over the breast and underneath the bandage. If the breasts are very heavy, and the patient out of bed, I often pad the shoulder, as shown in Figs. 4 and 5.

Fig. 1 shows the manner of lifting the breast at the first step of bandaging.

Fig. 2 shows the usual manner of bandaging while recalling the secretion.

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FIG. 1.

FIG. 2.

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FIG. 3.

FIG. 4.

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FIG. 5.

E

FIG. 6.

F

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Fig. 3 is the back view of Fig. 2.

Fig. 6 shows the manner of covering one nipple for rest while exposing the other for nursing. A small safety-pin in the converging layers of bandage at either side of the nipple is used to prevent displacement of breast or bandage. Aside from these two safety-pins, six large ones are sufficient to retain the well-applied bandage for many days. Pins are required only where the bandages cross and converge, and should be made to include as many layers of the bandage as possible.

I have not employed heavy pressure, nor have I deemed it desirable. On the contrary, I have sought to lift the gland slightly, and at the same time to secure, so far as practicable, light and equable pressure. In a few instances the added pressure arising from an increasing accumulation of the secretion has occasioned pain a few hours after the first bandaging, from which it has appeared that the first bandage should have been applied with less lifting and also less tension. In bandaging caution is required lest with each succeeding turn of the roller we effect too much lifting and compression.

A breast which is the seat of abscess may be gently lifted, as shown in Fig. 2, with the effect of affording some relief from pain, but if fully bandaged, as shown in Figs. 4, 5, or 6, the pain would be increased, especially if the compression is considerable. In the inflammatory cases I have employed this method of bandaging almost to the exclusion of other forms of breast-binder now so much used in certain maternities. It possesses the following advantages:

It effectually lifts the breasts, and thus lessens pain or discomfort.

It exerts somewhat equable pressure on the breasts to any degree desired.

It conceals the nipple of the diseased organ, preventing any interference on the part of patient or attendants between our visits without our knowledge or detection.

It constantly exposes the nipple of the well breast to the child, thus avoiding any adjustment of the bandages before and after nursing.

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The roller bandage, however, cannot be well applied unless the patient is able to sit erect during its application. This would form a serious objection to its use with those who enjoin their patients to maintain a strict recumbent position during the first week following delivery. I generally require my puerperal patients to assume the sitting posture during urination and defecation, and their heads are thus kept well in balance, so that they easily maintain the erect sitting posture during application of the bandage.

From these observations of the breast in its various conditions of functional activity, and in disease, I am led to the following conclusions:

1. That the breasts soon after delivery are strongly disposed to secrete milk, and will usually continue to do so for a few days, even if they be not nursed. If no attempt be then made to nurse or withdraw the milk, the secretion rapidly diminishes, and they return to their normal size and condition of inactivity.

2. That, as a rule (to which there are probably few if any exceptions), the retained secretion does not undergo changes which convert it into an irritant fluid, but, instead, it remains innocuous to the walls of the ducts and acini which contain it, and under favorable conditions is finally absorbed without trouble or embarrassment to either the normal or inflamed adjacent tissues.

3. That, as a rule, the secretion of milk continues only while the natural stimulus, as nursing or other means of emptying the breast, continues to be employed. That the secretion, either in the normal or inflammatory condition, begins to abate when such stimulus is withdrawn, and will entirely cease after a week or two.

4. That an abundant secretion of milk which has recently and entirely ceased, as a result of a complete withdrawal of stimulus, may be again recalled upon the application of the child.

5. That the presence of a decided inflammatory movement in the breast greatly diminishes the secretion of the gland.

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6. That the sympathetic relation between the two breasts is almost, if not wholly, a sensory one. That neither the function of secretion nor the condition of the circulation in one breast is appreciably and directly affected by either physiological or pathological processes which may be going on in the other.

Inflammation of the breast should be regarded as a progressive rather than a self-limited disease, arising in most instances from septic infection of the nipple. It is attended by a train of pathological changes which become more severe and complicated until the conditions or circumstances which have produced them, and which favor their continuance, are abated or removed.

The inflamed breast, or the breast of an inflamed nipple, should be supported in a well-applied bandage, and no attempt made to nurse or withdraw the secretion until the entire subsidence of the inflammatory movement. So long as one or more indurations remain nursing is contra-indicated.

Sore and fissured nipples often produce serious inflammation of the breast. If, therefore, in any particular case we have reason to believe that the lesion will soon lead to the development of mastitis, or should it appear that a cure of the nipple cannot be effected during the continuance of nursing, we shall be justified in the entire suspension of suckling through the affected part until a cure of the local trouble is established.

The well-applied bandage exerts a salutary influence on the morbid conditions which affect the nursing breast, and it is also a most grateful measure of treatment.

[If the reader will kindly compare these conclusions with those which closed my first paper upon this subject, and to which this is supplementary, he will find that the additional and very considerable experience of ten years has not led me to make any material alteration or amendment to the original claims in this relation.]

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TABLE, GIVING BRIEF HISTORIES

| No. | Name. | Age. Child-birth. | Ceased nursing. | Ceased nursing and bandaged on account of— | Febrile move-ment. | Escape of se-cretion from affected breast after applica-tion of band-age. |
|---|---|---|---|---|---|---|
| 1 | A. H. | 22 First. | Six weeks after childbirth. | Severe pain in right breast, followed by a chill. | No record. | None. |
| 2 | H. A. W. | 22 Third. | Four weeks after childbirth. | Chill and rigors lasting five hours; left breast red and painful and much distended. | At first visit, 102°; second visit, 101.5°; third, 99.5°. | None. |
| 3 | Van N. | 24 Multi-para. | Eight months after childbirth. | Chill, fever, and pain in the left breast, which was much distended. | First day, 100°; second day, 98.5°. | None. |
| 4 | H. A. | 24 Second | Six days after childbirth. | Sore and fissured right nipple, redness of the breast; severe pain; distention. Nipples had been sore three days. | 101.5°. | A good deal of draining. |
| 5 | C. T. | 24 First | Four days after childbirth. | Sore nipples and inability of child to nurse either breast. | No elevation of tempera-ture. | Both breasts were drained fully. |
| 6 | M. S. | 27 Second | Five weeks after delivery patient entered hospital for the treat-ment of abscess of left breast. | Unintentional separation of of child from mother. | 102°, but no doubt due to the already developed abscess in right breast. | None. |
| 7 | J. T. | 23 Third. | Eleven days after childbirth. | Sore, fissured left nipple, and threatening masti-tis. | No record. | A good deal of draining. |
| 8 | A. S. | 38 Third. | Five days after childbirth. | Sore nipple on left side, great distention and fear of mastitis. | No record. | Free drainage after second day of band-aging. |
| 9 | S. W. | 22 Third. | Four days after delivery. | Very sore left nipple and inability of child to empty breast. | No elevation of tempera-ture. | None. |
| 10 | O. H. | 25 Third. | Four months after delivery. | Pain, distention, heat, and redness of left breast; a hard chill two days before. | 100°; next day, 99°. | None at first; very slight on fourth day. |
| 11 | E. G. | 21 Second | Four days after delivery. | Very sore left nipple, breast hard and distended; inability of child to nurse at this side. | No record. | Slight drain-ing. |
| 12 | F. J. | 22 First. | Four days after delivery. | Both nipples very sore, and inability of child to empty the breast. | None. | A good deal after the sec-ond day of bandaging. |

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OF TWENTY-FOUR CASES.

| Sensory phenomena. | Maximum degree of distention obtained on the— | Nipple exposed and nursing resumed on the— | Bandage abandoned and secretion fully recalled on the— | Further history of breast. | Other breast. | Child. |
|---|---|---|---|---|---|---|
| Bandage afforded relief from the pain; no anodynes given. | Second day after bandaging. | Fourth day after bandaging. | Third day after the resumption of nursing. | Uneventful; lactation normal. | No trouble; nursed throughout. | Well nourished from breasts. |
| Pain relieved by bandaging, although two or three doses of morphia given. | Second day after bandaging. | Fourth day after bandaging. | Seventh day after the resumption of nursing. | " " " | " " " | " " " |
| Very little pain after it was bandaged. No anodynes. | Second day after bandaging. | Third day after bandaging. | Fifth day after the resumption of nursing. | " " " | " " " | " " " |
| Pain greatly relieved after the bandaging. No anodynes. | Second day after bandaging. | Sixth day after bandaging. | Sixth day after the resumption of nursing. | " " " | Nipple slightly sore, but healed while nursing. | " " " |
| Feeling of fulness in the breasts, but no marked pain while bandaged. No anodynes. | Second day after bandaging. | Both. Sixth day after bandaging. | Seventh day after the resumption of nursing. | " " " | Both were interrupted at once. | Well nourished, but had to feed after six months. |
| No pain. | Third day after bandaging. | Twelfth day after bandaging. | Third or fourth day after the resumption of nursing. | Probably normal supply of milk from this breast. | Abscess opened when first entered hospital. | Half nourished from left breast. |
| Discomfort, but very little pain. No anodynes. | Third day after bandaging. | Eighth day after bandaging. | Eighth day after the resumption of nursing. | Uneventful; lactation normal. | No trouble; nursed throughout. | Well nourished from breasts. |
| Very little pain. No anodynes. | Third day after bandaging. | Sixth day after bandaging. | Fifth day after the resumption of nursing. | " " " | " " " | " " " |
| Pain for which morphia was given twice. | First day after bandaging. | Second day after bandaging. | Third day after the resumption of nursing. | " " " | " " " | " " " |
| Very little pain after bandaging. No anodynes. | Second day after bandaging. | Sixteenth day after bandaging. | Eighth day after the resumption of nursing. | " " " | " " " | " " " |
| Discomfort, but not much pain, except while out of bandage. No anodynes. | Second day after bandaging. | Seventh day after bandaging. | Fifth day after the resumption of nursing. | " " " | Nursed throughout, but some soreness of nipple. | " " " |
| No pain. No anodynes. | First day after bandaging. | Fourth day after bandaging. | Fourth day after the resumption of nursing. | " " " | Both breasts affected and rested. | " " " |

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| No. | Name. | Age. Child-birth. | Ceased nursing. | Ceased nursing and bandaged on account of— | Febrile movement. | Escape of secretion from affected breast after application of bandage. |
|---|---|---|---|---|---|---|
| 13 | J. D. | 27 Second | Three days after delivery. | Sore right nipple. | 99.5°. | Great deal a few hours after bandaging. |
| 14 | J. F. Y. | 24 Third. | Four weeks after delivery. | Nipple of left side had been sore one week; breast greatly distended and reddened. | 100°. | Slight draining. |
| 15 | A. Van K. | 27 Third. | Three weeks after delivery. | Distention, pain, and redness of left breast, following a sore nipple. | 100°. | None. |
| 16 | R. S. B. | 31 Second | Three days after delivery. | Both nipples sore, breasts distended, child cannot nurse. | None. | None. |
| 17 | J. H. B. | 32 Third. | Ten days after delivery. | Right nipple very sore, breast distended; child would not nurse; prolonged chill. | First day, 103°; second day, 101°. | Constant draining. |
| 18 | D. I. | 23 First. | Four days after delivery of twins. | Both nipples sore, breasts greatly distended; children would not nurse. | 99.8°. | Constant draining. |
| 19 | P. B. | 26 First. | Eleven days after delivery. | Right nipple and breast very sore and painful; nursing impossible; skin red, tense, and shining. | 99.3°. | Free draining. |
| 20 | P. B. | 26 First. | Three weeks after delivery. | Left breast very hard, sore, painful, and distended; skin reddened at one side of breast. | 99.2°. | Free draining. |
| 21 | D. D. | 22 First. | Seven days after delivery. | Greatly distended breasts, sore and fissured nipples; child would not nurse. | 99.6°. | Drained profusely for three or four days. |
| 22 | C. D. | 29 Second | Four weeks after delivery. | Redness, pain, and distention of right breast following a very sore nipple. | 100.5°. | A little draining. |
| 23 | R. B. | 25 Third. | Five days after delivery. | Right nipple sore; breast greatly distended and very painful. | No record. | Drained very freely. |
| 24 | A. J. | 43 Seventh | Five days after delivery. | Very sore left nipple; greatly distended breast, and inability of child to withdraw the secretion. | 99.6°. | No drainage. |

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| Sensory phenomena. | Maximum degree of distention obtained on the— | Nipple exposed and nursing resumed on the— | Bandage abandoned and secretion fully recalled on the— | Further history of breast. | Other breast. | Child. |
|---|---|---|---|---|---|---|
| Fulness in breast, but no pain. No anodynes. | Second day after bandaging. | Eighth day after bandaging. | Ninth day after the resumption of nursing. | Uneventful; lactation normal. | Nipple slightly sore, but healed while nursing. | Well nourished from breasts. |
| Painful until lifted by bandage. No anodynes. | Second day after bandaging. | Eighth day after bandaging. | Fifth day after the resumption of nursing. | " " " | No trouble; nursed throughout. | " " " |
| Some pain, but anodynes were not given. | Second day after bandaging. | Seventh day after bandaging. | Seventh day after the resumption of nursing. | " " " | " " " | " " " |
| Fulness, but no pain while bandaged. No anodynes. | Third day after bandaging. | Eighth day after bandaging. | Fifth day after the resumption of nursing. | " " " | Both breasts affected and rested. | Fairly nourished from breasts. |
| Pain not entirely relieved after bandaging. Opiates given one day. | Second day after bandaging. | Seventh day after bandaging. | Eighth day after the resumption of nursing. | " " " | No trouble; nursed throughout. | Well nourished from breasts. |
| Discomfort, but no pronounced pain while supported in bandage. No anodynes. | Third day after bandaging. | Seventh day after bandaging. | Seventh day after the resumption of nursing. | " " " | Both breasts affected and rested. | Both children half nourished from breasts. |
| Pain, for which a single dose of morphia was given. | Second day after bandaging. | Eighth day after bandaging. | Sixth day after the resumption of nursing. | " " " | See Case 20. | See Case 20. |
| Morphia required, and given for relief of pain one day. | Third day after bandaging. | Fourteenth day after bandaging. | Seventh day after the resumption of nursing. | " " " | Performing fully the functions of secretion. | No feeding; child weighed 26 lbs. when ten months old. |
| Pain, for which a single dose of morphia was given. | First day after bandaging. | Fifth day after bandaging. | Seventh day after the resumption of nursing | " " " | Both breasts affected and rested. | Well nourished from breasts. |
| Pained until bandaged. No anodyne. | Second day after bandaging. | Ninth day after bandaging. | Sixth day after the resumption of nursing. | " " " | No trouble; nursed throughout. | " " " |
| Pained a great deal until bandaged. No anodyne. | Twelve hrs. after bandaging. | Seventh day after bandaging. | Tenth day after the resumption of nursing. | " " " | Nipples slightly sore, but nursing uninterrupted. | " " " |
| Great deal of pain until bandaged. | Second day after bandaging. | Seventh day after bandaging. | Fifth day after the resumption of nursing. | " " " | No trouble; nursed throughout. | " " " |

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# RETROPOSITION OF THE UTERUS.

By George W. Jarman, M.D.,
*New York.*

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Although the writer uses the word retroposition in the title of this paper, he is convinced that it is not the term which most correctly designates the condition under consideration.

Nearly all authors who describe this displacement of the uterus use the term retroposition to express not only this, but another malposition, namely, retroversion, which has nothing in common with the one under consideration.

It is needless to say that this usage of a term to describe two very different positions of the uterus can result only in confusion. The writer would use the word retrocession as expressing more perfectly the real position than retroposition. Retrocession carries with it no idea of any turning of the uterus around a transverse axis. It simply means that the uterus has receded toward the sacrum.

Schultze, Winkel, Hart and Barbour, and Pozzi, all speak of this malposition, yet in so meagre a manner as to leave one to suppose that it is not only very infrequent, but that few symptoms accompany it. From an experience extending over five years in one of the largest gynecological clinics in this city, the writer has found that retrocession of the uterus existed in the proportion of one to eighteen, where malposition of the uterus was diagnosed, and that symptoms so marked depended upon this position that treatment was desired.

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The writer bases the deductions in this paper upon his observation of sixty-two patients with retrocession.

Inasmuch as the utero-sacral ligaments and the peritoneal surfaces of Douglas's pouch are so important in the production of this displacement, it will be necessary to make slight reference to their anatomy.

"The utero-sacral ligaments are peritoneal folds, two in number, inclosing connective tissue and unstriped muscular fibre, passing from the lower lateral part of the body of the uterus outward and backward toward the second sacral vertebræ" (Hart and Barbour). They form the lateral boundaries of the Pouch of Douglas. The sacral attachments of these ligaments is on a higher plane than their uterine ends, and if they become shortened the uterus is not only drawn backward, but is also lifted upward. The lymphatics of the vagina, cervix, and uterus are very numerous and complex, and it seems almost impossible, from an anatomical standpoint only, to determine their distribution. According to Sappey, the lymphatics of the upper three-fourths of the vagina and cervix enter the hypogastric glands which lie subperitoneally in the space between the external and internal iliac vessels. Le Bec, however, holds that the lymphatics from these structures pass out underneath the broad ligaments to the obturator gland of Guérin.

Recognizing how very rich the pelvic organs are in lymphatics, and bringing to bear the assistance of clinical observation, it would seem that it is not paradoxical to state that both authorities are right. We all see instances of inflammatory exudate following laceration of the cervix with septic infection, where the extension is sometimes in the broad ligament, and again retrouterine. This indeed seems to offer the true explanation of the inflammation which is found to exist in the utero-sacral ligaments. The cervical mucous membrane becomes inflamed, and septic material travels through the lymphatics which lie underneath the peritoneal covering of these ligaments, and they in turn become inflamed. This process

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may go on so slowly that the patient will complain only of backache, and, attributing it merely to overexertion or to some other possible cause, may not even seek treatment. It is only after secondary contraction, which follows this new infiltration of connective tissue, takes place that the real condition of the retrocession exists. (See Figs. 1 and 2, showing the normal and retroceded uterus.)

FIG. 1.

Diagram of vertical mesial section of female pelvis, showing normal distance between uterus and sacrum. Bladder empty.

Should the patient possess an unusually long cervix, the condition of pathological anteflexion will be induced by the contraction of these ligaments. This is perfectly easy of explanation when we consider that the uterus is constantly subjected to intraabdominal pressure which tends to force the fundus of the normally placed organ toward the pubes, while

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the contractile power of the vagina tends to force the cervix in its own axis, which is nearly at right angles to that of the body of the uterus. Hence, should the cervix be abnormally long, the leverage will be increased so that it must assume the axis of the vagina.

It is the writer's belief that it is simply because operators have overlooked this retrocession and have given their entire

FIG. 2.

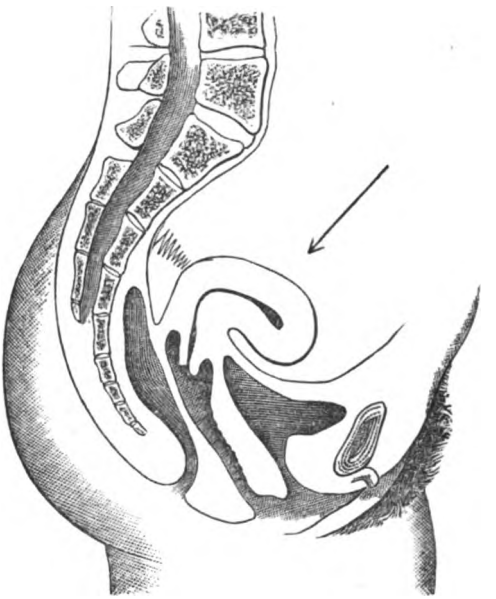

Diagram of vertical mesial section of female pelvis, showing contracted utero-sacral ligament, with uterus in the position of retrocession.

attention to one of its frequent effects, namely, anteflexion, that such poor results have been obtained from the treatment of so-called cases of anteflexion. The recent operation devised by Dr. E. C. Dudley in reality shortens the intravaginal portion of the cervix, hence decreases the leverage, also affords free drainage for the endocervicitis, and it seems quite

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possible that this would explain, at least in some of the cases, the marked relief obtained. On the other hand, viewing the subject from the standpoint that the retrocession is so frequently the cause of the anteflexion, it is not surprising that failure to relieve the symptoms so often follows even extreme divulsion and tamponade. It has been said above that the uterus is not only drawn backward by reason of the shortened utero-sacral ligaments, but that it is also lifted upward, nearer to the brim of the pelvis, inasmuch as the sacral attachment is on a higher plane than the uterine. This mechanical elevation of the uterus deprives it of the natural support offered by the floor of the pelvis. In this way these already inflamed ligaments are forced to sustain more weight than when the uterus is in its normal position.

The utero-sacral ligaments receive their nerve supply, in common with the uterus, through the sympathetic system. Branches from the hypogastric plexus, which lies between the common iliac arteries, reinforced by branches from the lumbar and sacral ganglia and sacral nerves, form the inferior hypogastric plexuses, and from these, filaments pass to the utero-sacral ligaments.

Pain in the sacral and lumbar regions is the most constant symptom associated with retrocession. This pain is often described by patients as being similar to that which they suppose they would experience if the back were broken, their expression being a "back-breaking pain." On standing, or in fact whenever the patient assumes the upright posture, this pain is increased. It would be difficult to understand why this should not be the case when we remember the increased weight which the ligaments are called upon to support. Women who are compelled to do their own work and lift heavy weights will suffer more than those who can assume the recumbent posture more frequently. Again, any constriction around the waist of patients with this malposition will intensify the pain by increasing the intraabdominal pressure. Sterility existed in nearly all the patients who came under the writer's observa-

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tion. That this condition is due to the position of the uterus is not claimed, but rather that the most frequent cause of the inflammatory process in the utero-sacral ligaments, namely, endocervicitis, seems the most plausible explanation of the sterility.

Vesical irritation is another symptom which accompanies this displacement. That this should be the case can readily be understood, if the changes in position of the normal uterus depending upon the contents of the bladder be borne in mind.

When the uterus has receded from its midway position between the pubes and sacrum, it must of necessity render its anterior attachment more tense. The vagina will unusually be found to be deep and both anterior and posterior walls overstretched.

If the cervix uteri is long, it will be found in the axis of the vagina and forming an acute angle with the body of the organ. Any attempt to move the uterus will cause the patient pain, which she refers to the back. Making traction on the cervix with a tenaculum, with the examining finger in the posterior fornix, will reveal the fact that the uterus has lost its normal mobility, and at the same time the tense utero-sacral ligaments can easily be made out. They will appear as two diverging cords attached to the posterior surface of the lower uterine segment, passing upward, backward, and outward. The uterus is frequently found to be in marked anteversion, caused by the round ligaments drawing the fundus forward. It is almost impossible to mistake this condition for any other.

Any inflammatory exudate in the cul-de-sac of Douglas may simulate retrocession, but the uterus will be more firmly fixed and will not be so near the sacrum. Spasmodic contraction of the ligaments of the uterus, a condition not infrequently observed in hyperæsthetic patients, might possibly be mistaken for retrocession. An examination under chloroform would reveal the true condition.

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Inasmuch as the condition which produces retrocession of the uterus is chronic, the non-operative treatment must be prolonged, if satisfactory results are to be obtained.

The cervical canal should be examined and the cervical endometritis relieved. Thorough curettage under local anæsthesia offers the best means for rapidly disposing of this condition. If the cervix is abnormally long it should be amputated. Lifting the uterus up, so that the strain on the utero-sacral ligaments is lessened, will relieve the patient's symptoms to a great extent. This may be done either with the tampon suitably medicated, or else with a retroversion pessary. It is not always possible to use the latter until after the tenderness of these ligaments has been reduced. The writer has not seen any good results from hot douches in the treatment of these cases. Chloral hydrate solution in glycerin, in the proportion of two parts to twenty, applied by means of the tampon, having a distinct analgesic effect, has relieved the pain of which these patients complain more certainly than other local treatment.

Massage is one of the surest methods of curing a patient with retrocession. I do not mean in this instance the ordinary pelvic massage, but the actual stretching of the contracted ligaments. It will often be necessary to restrict treatment to less harsh methods until the local tenderness is somewhat abated. As soon as the patient will bear it, and selecting a time at least four days distant from the menstrual period, it can be employed. The vagina, cervix, and cervical canal should be rendered as aseptic as possible, and with a double tenaculum the anterior lip of the cervix can be grasped. This procedure in reality produces very little pain on account of the insensitiveness of the cervix. Making traction on the tenaculum, with the examining finger of the other hand in the posterior vaginal fornix, will put these shortened ligaments on even greater tension and permit the operator to press his finger against them both transversely and laterally. The amount of force which can be exercised will be limited by the degree of

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pain which is produced, it being advisable to stop short of severe pain. Gentleness and persistence will accomplish far more than harsh handling. It is needless to say that in this, as in other forms of the pelvic massage, the operator must be careful not to let his hand come in contact with the vestibule or clitoris.

Although it is not possible for the writer to prove the statement, yet clinical experience has demonstrated to his own mind that the red iodide of mercury, administered internally, has been of marked benefit to patients with retrocession. The only explanation possible is that it stimulates the lymphatic system and causes it to absorb the products of the inflammatory process. At any rate he has made use of it in quite a number of cases, and has satisfied himself that it has been at least an adjuvant in the treatment of retrocession.

The bowels should be kept active. Electricity has decided pain-relieving power in these cases and should not be overlooked. When, from lack of time or the impossibility of securing the regular services of a physician, local treatment becomes impossible, or when such treatment fails to bring about the desired relief, operative methods will be advisable.

Since the revival of the vaginal operation for the relief of abnormal conditions of the pelvic organs, it has been demonstrated that these ligaments can be cut with perfect safety.

In performing vaginal hysterectomy, as soon as these ligaments are divided, the increased mobility of the uterus is marked. The same thing is found when doing this operation by the abdominal method; the uterus can often be raised into the abdominal incision after its posterior attachments have been liberated, whereas previous to this procedure the organ may have appeared to be almost fixed.

There can be almost no danger in the operation for the division of the utero-sacral ligaments through the vaginal route. Under strict antiseptic precautions a transverse incision, one inch in extent, through the posterior fornix, can be made and Douglas's pouch opened. Traction on the cervix



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will render the ligaments tense and their location simple. With the guidance of the index finger their anterior attachments can be cut with blunt-pointed scissors. Hemorrhage from this source would be slight and under perfect control. The traction of the vaginal walls is sufficient to hold the uterus forward during the process of recovery. The incision through the fornix could be closed with sutures, as after vaginal ovariotomy. The writer had an opportunity of witnessing recently a very similar procedure in the hands of Dr. H. C. Coe. In this case there was a small fibroid immediately behind the uterus, apparently attached to one of the utero-sacral ligaments. During the process of its removal it was necessary to cut these ligaments. As soon as they were divided the uterus sprang forward to its normal relationship with the pubes; it had been in marked retrocession. The case demonstrated the easy access to these ligaments through the posterior vaginal vault.

The writer would draw the following conclusions:

1. That retrocession has been too often overlooked in the explanation of pelvic pain.

2. That the contraction of the utero-sacral ligaments must be taken into consideration in the treatment of anteflexion.

3. That this condition can easily be relieved by operative measures if local treatment does not succeed.

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# HYSTERECTOMY FOR PUERPERAL SEPTICÆMIA.

By W. Easterly Ashton, M.D.,
*Philadelphia.*

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I shall not attempt in this paper to discuss the pathology and symptomatology of puerperal septicæmia except so far as may be necessary to elucidate certain surgical questions which may arise, but shall confine myself to the consideration of the pathological conditions indicating hysterectomy.

It is certainly true that the views of the profession upon this subject are more or less theoretical and unsatisfactory, and, like many questions in the past history of pelvic surgery, we must depend upon the practical experience of the future to definitely settle the true position of this operation.

The conditions indicating hysterectomy for puerperal septicæmia are:

1. Suppurative inflammation of the uterus.
2. Tubal and ovarian abscesses.
3. Abscesses of the broad ligament.
4. Rupture of the uterus.

Suppurative Inflammation of the Uterus. It has not been my experience to meet with an uncomplicated case of suppurative inflammation of the uterus following labor, either upon the operating table or at a post-mortem examination.

The cases which I have seen were complicated with pus accumulations in the uterine appendages or in the connective tissue of the pelvis. The reason for this is due to the fact that the septic process extends to the pelvic organs before the

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necessity for operative interference is appreciated, or death takes place.

If this statement is true, we have an important clinical fact to guide us in determining the question of early hysterectomy in this class of cases.

It is impossible by any method of examination known at the present time to settle the question in a given case whether or not the parenchyma of the uterus is the seat of septic infection. This can only be determined by taking into consideration the history of the symptoms and the treatment which has been adopted, and even then the diagnosis is far from being a positive one. By way of illustration I shall take a hypothetical case. A woman develops septicæma within a few days after labor. Irrigation followed by curettage produces no marked change in the symptoms. An examination of the pelvis fails to demonstrate the existence of any pathological changes in the uterine appendages or broad ligaments, or involvement of the bladder. Now, what conclusion, under these circumstances, are we warranted in holding? To my mind, we are forced to conclude that the parenchyma of the uterus has become infected. If this view of the case is the true one, hysterectomy should be resorted to at once, and not delayed until there is evidence of a gross pelvic lesion. Nothing can be accomplished by the delay as the condition is practically incurable, and, furthermore, hysterectomy must be performed before the patient becomes exhausted if we hope to save life.

I admit, as a matter of course, the extreme uncertainty of the existence of an uncomplicated septic infection of the parenchyma of the uterus in a given case, yet we all must recognize the fact that if the endometrium is the seat of an acute disease, the tissues below must become involved unless the morbid process is promptly arrested. For this reason, therefore, I believe that curettage followed immediately by irrigation should be resorted to at once in all cases of septic endometritis.

This, in my judgment, is a safer plan than first irrigating

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the uterine cavity and then later on using the curette if the symptoms do not improve.

I believe the experience of the future will show that hysterectomy is justified in cases of septic endometritis which go from bad to worse after repeated curettage and flushing, notwithstanding the fact that no pelvic lesion can be demonstrated.

TUBAL AND OVARIAN ABSCESSES. In March, 1891, I performed hysterectomy for puerperal septicæma. The history of the case is as follows: The patient, a white woman, twenty-one years of age, was confined on the 20th day of February. The child was delivered with forceps. The labor was followed by septicæmia. Her physician employed vaginal and intrauterine irrigation until the 4th day of March, when he discharged her, although at the time she had a temperature of 100° F.

On the evening of March 7th she called in another physician, who found her weak and exhausted, with a pulse of 145 and the temperature 104.3° F. The tongue was dry and heavily coated and she suffered from an offensive diarrhœa. The lochia had ceased. The abdomen was free from pain and tenderness. She was given a saline and placed on large doses of quinine and whiskey.

March 8th, A.M. Free bowel movements; temperature 100° F.; pulse 115. P. M. Temperature 99° F.; pulse 100; general condition improved. On the following day the temperature and pulse became normal and the general condition was much better. All of the symptoms continued to improve until the evening of the 17th, when she became suddenly exhausted and complained of pain in the lower abdomen. March 18th. On this day I saw the patient for the first time; her temperature was 100° F. and the pulse 120; she was profoundly septic.

On examination the uterus was found to be enlarged and boggy, with a soft mass on both sides. On the following morning the abdomen was opened and the uterus and its appendages removed. Both tubes were enlarged and filled

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with pus, which was leaking into the pelvic cavity. The uterus was soft and its walls filled with small collections of pus. On the posterior wall of the body of the womb a perforation had been made by the ulcerative process large enough to admit the index finger. The pelvic cavity contained about eight ounces of pus. The patient lived twenty-four hours, her death being due to septic exhaustion.

It is extremely difficult, if not impossible, to recognize septic changes in the uterine appendages until the process has developed sufficiently to cause an enlargement of the diseased organs. After this enlargement has taken place the diagnosis is easily made by a bimanual examination. Prior to the existence of a gross lesion we are able to recognize that the infection is still active without localizing its source. Under these circumstances, therefore, the indication for hysterectomy is not positive, and can only be inferred from the fact that local treatment has not been followed by improvement.

The indication for hysterectomy in early septic involvement of the uterine appendages is on the same basis as that of suppurative inflammation of the parenchyma of the uterus, and can only be inferred. We are, therefore, justified, if local intrauterine treatment fails to improve the symptoms, in performing hysterectomy.

Abscesses of the Broad Ligament. The following is the history of a patient upon whom I performed hysterectomy ten weeks after her confinement: The patient, the wife of a physician living in the interior of Pennsylvania, was confined on the 1st day of March, 1894. The labor was normal and the patient did well until the sixth day, when fever and the usual symptoms of puerperal septicæmia developed. I saw the patient for the first time on the tenth day, and found her in a condition of profound prostration, with a temperature of 104° F. and a rapid and feeble pulse. The abdomen was flat and no pain was felt upon pressure over the pelvic organs. Examination per vaginam revealed a large and flabby womb, which was freely movable. As the patient was thin

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no difficulty was experienced in palpating the uterine appendages, which were found to be normal. A diagnosis of septic endometritis was made and the cavity of the uterus was thoroughly curetted and flushed under ether.

Although prompt and decided improvement followed this operation, convalescence was extremely slow and unsatisfactory. The patient's strength did not improve and there was a daily rise in the temperature. In the course of a few weeks pain was felt in the right inguinal region. Continuing to grow worse her husband brought her to Philadelphia, and placed her under my charge in the Medico-Chirurgical Hospital.

The patient presented all the symptoms of septic infection. She was emaciated and very weak. The temperature was 100° F. and the pulse was running between 110 and 120. On examination the uterus was found to be fixed and pushed toward the left side of the pelvis, while on the right side was felt a semi-fluctuating mass the size of a lemon.

Abdominal section was performed on the 12th day of May, 1894. The omentum was adherent to the bladder, uterus, and lateral walls of the pelvis. It was ligated at its lower third and cut away, the resected portion being then freed from its attachments.

Before exposing the pelvic organs it was found necessary to free several coils of adherent ileum. The tube and ovary on the left side were normal; but on the right side there was an abscess of the broad ligament and ovary, the latter being firmly adherent to the head of the colon and vermiform appendix. The Fallopian tube was apparently normal and its fimbriæ free; the abdominal ostium was patulous. The lower surface of the ovarian abscess was adherent to the ligament; there was, however, no communication between the pus cavities. The uterus was enlarged and softened and its walls were infiltrated with pus. The uterus and its appendages were removed after first ligating the broad ligaments. In separating the ovary from the head of the colon an opening was made into the bowel the size of a silver dollar. This tear

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was closed with silk sutures. The vermiform appendix was removed, as it was enlarged and gangrenous. The patient made a good recovery and left the hospital at the end of five weeks.

This case presents several points of interest. When I saw the patient on the tenth day after her confinement she was evidently suffering from a septic endometritis which had involved the deeper structures of the uterus. This is shown by the fact that curettage and flushing, while modifying the infection, did not remove it. Again, the infection of the broad ligament was, in all probability, through the lymphatics, as the tubes were normal. Although no positive diagnosis of the involvement of the broad ligament and ovary was possible prior to the presence of the gross lesion, yet abdominal section should have been performed in this case when it was evident that local treatment failed to establish convalescence.

RUPTURE OF THE UTERUS. In 1891 I performed hysterectomy for septicæmia three days after labor. The patient was in active labor for forty-eight hours before being delivered. The fœtus was "doubled" and the attending physician succeeded, after much difficulty, in bringing down a foot and delivering the child. Within twenty-four hours the patient presented all the symptoms of infection. I saw her for the first time on the third day, and found her profoundly septic, with a temperature of 103° F. and the pulse 135. On examination the uterus was found to be relaxed. Introducing two fingers into the cavity of the womb and making, at the same time, suprapubic pressure, I discovered a small tear through the posterior wall above the internal os. Abdominal section was performed and the uterus removed. There was present a general purulent peritonitis, and a tear was found in the posterior wall of the womb opening directly into the abdominal cavity. The patient died on the following day from septic exhaustion.

When a rupture of the uterus occurs during labor and is

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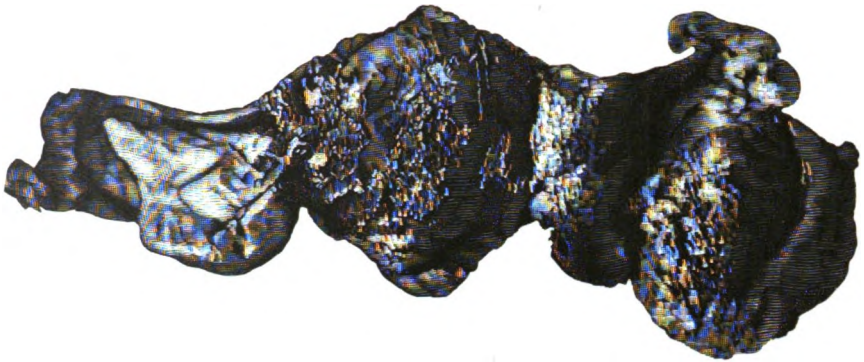

Posterior view—ovarian and broad ligament abscess.

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recognized at the time, hysterectomy should be performed at once. Tears may occur, however, without producing any symptom which would lead the attending physician to suspect their presence.

These cases, I am inclined to believe, occur more frequently than is generally supposed. I have thought for some time that those cases of fulminating puerperal septicæmia coming on within twenty-four to forty-eight hours after labor might possibly be caused, in some instances at least, by tears of the uterus, which would account, not only for the rapid outset of the symptoms, but also the generally fatal results.

The ease with which the laceration in the case just referred to was discovered gives us a hint as to the necessity for making an examination of the interior of the uterus in all cases of puerperal septicæmia of uterine origin. This is especially true of those cases coming on a short time after labor. There is no difficulty in making the examination, as the womb is always more or less relaxed after it has once become infected. With two fingers in the uterine cavity and the free hand making pressure through the abdominal wall over the womb, the examination is easily and thoroughly made.

It is my practice to examine the interior of the uterus for lacerations in cases of puerperal septicæmia immediately before curetting. The patient is then under an anæsthetic and may be examined with but little additional trouble.

Should a laceration be discovered hysterectomy is indicated.

In concluding this paper I shall sum up my views as follows:

1. That hysterectomy is indicated for puerperal septicæmia in suppurative inflammations of the uterine parenchyma, abscess of the uterine appendages and broad ligaments, and ruptures of the uterus.

2. That the diagnosis of septic infection of the deeper structures of the uterus or the early involvement of the broad ligaments and uterine appendages may be inferred from the fact that the patient does not improve after repeated curettage

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and flushing. Under these circumstances hysterectomy is indicated, even when no gross lesion can be detected.

3. That ruptures of the uterus may occur without producing any symptoms which would lead the attending physician to suspect their presence; and that these tears occur more frequently than is generally supposed, causing those cases of fulminating puerperal septicæmia which are met with from time to time.

4. That the diagnosis of these tears is easily made by a digital examination of the interior of the uterus.

5. That the final position of hysterectomy for puerperal septicæmia must rest upon the results obtained from the clinical experience of the future.

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# BACTERIOLOGY IN PELVIC SURGERY.

By Charles B. Penrose, M.D.,
*Philadelphia.*

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The bacteriological study of inflammatory diseases of the Fallopian tubes and ovaries has not only much enlarged our knowledge of the pathological processes affecting these structures, but also promises to be of practical value in the treatment of the morbid conditions.

The pathogenic organisms which are found in inflammation of the uterine appendages are the gonococcus, the streptococcus and staphylococcus, the bacillus coli communis, the tubercle bacillus, and the pneumococcus.

The great majority of the cases of pyosalpinx may be divided into two classes: those which are caused primarily by the gonococcus, and are due to venereal infection; and those which are caused by the staphylococcus and the streptococcus, and are due to septic infection after abortion, labor, and operations. These two varieties may be mixed. The bacillus coli communis enters the abscess cavity secondarily through an adherent or morbid intestinal wall. Cornil (*Arch. de Med. Exper.*, t. i. p. 353) found bacteria in the substance of the wall of a partly necrosed intestine. Tavel and Lantz believe that though microörganisms cannot pass through the wall of a healthy bowel, yet they readily escape if the gut be the seat of even a slight lesion. Repeated bacteriological examinations made by different observers show that the bacterium coli commune is found in those cases in which a por-

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tion of the intestinal wall is in a pathological condition and is adherent to the abscess wall.

The pneumococcus has been found but a few times in the pus of pyosalpinx. Rosthorn (*Prager med. Wochenschrift*, 1894, No. 2) reports a case, and states that he has been able to find only two cases reported in the German literature, and one in the French.

Hartmann and Morax (*Annales de Gyn. et d'Obstétrique*, 1894, No. 7) report two cases. The disease may occur unassociated with pneumonia or tuberculosis. The pneumococcus obtained from tubal pus seems to be excessively virulent. Death from sepsis has occurred from it, and inoculation of animals proves rapidly fatal.

Bacteriology has demonstrated that

I. The pus, in suppuration of the uterine appendages, does not contain microörganisms in every case.

II. The danger of peritoneal infection from the pus of a pelvic abscess is dependent upon the variety of organism present.

A micro-organism is present, at some stage of the pathological process, in every case of suppuration of the uterine appendages. As the disease progresses, however, the micro-organism dies and disappears, and the pus becomes sterile. Such a result probably occurs in every case which runs a chronic course for a sufficient time.

Bumm found that the gonococcus when inoculated in blood serum failed to grow after five or six days. Bockhart found that it failed to grow after twelve to fourteen days. Wertheim (*Archiv für Gyn.*, 1892, Bd. xlii., Heft 1) found that the gonococcus died upon agar-agar and blood-serum after forty-five days, though repeated cultures were frequently made.

It seems probable that an acute attack of inflammation in a chronic case is accompanied by the presence of active micro-organisms. And in any chronic case there is always danger

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of infection by the bacillus coli communis passing through an adherent intestinal wall.

Many observations go to prove the statement that pathogenic organisms, in time, disappear in inflammation of the uterine appendages.

In twenty cases of pyosalpinx examined by Wright (*Amer. Journ. Med. Sci.*, Feb. 1895), the gonococcus was found in only four, and in the remaining cases, with two exceptions, no bacteria of any kind were found.

Hartmann and Morax (*loc. cit.*) examined the pus in thirty-three cases of pelvic suppuration originating in the adnexa, with the following results: In thirteen cases the pus was sterile; in thirteen, gonococci were found associated with the bacillus coli communis, when a pyosalpinx was intimately adherent to the rectum. Streptococci were found in four cases, in two of which the bacillus coli communis was also present. In two cases the pneumococci were present. In one the bacillus coli communis was found alone.

Schauta (*Archiv. für Gyn.*, 1893, No. 44) found that in 134 cases of pyosalpinx the pus was sterile in 101; there were gonococci in 18; streptococci and staphylococci in 14; bacillus coli communis in 1.

Wertheim (*loc. cit.*) gives the following interesting table of cases in which bacteriological examination was made of the pus:

| Observer. | Number of cases. | No organism. | Gonococci. | Streptococci. | Staphylococci. | Pneumococci. | Harmless bacteria, saprophytic bacteria. |
|---|---|---|---|---|---|---|---|
| Orthman . . . | 8 | 7 | 1 | 0 | 0 | 0 | 0 |
| Westermark . . | 1 | 0 | 1 | 0 | 0 | 0 | 0 |
| Schmitt . . . | 1 | 0 | 1 | 0 | 0 | 0 | 0 |
| Stemann . . . | 1 | 0 | 1 | 0 | 0 | 0 | 0 |
| Wertheim . . . | 9 | 1 | 6 | 0 | 0 | 0 | 1 |
| Schaeffer . . . | 11 | 10 | 0 | 0 | 0 | 0 | 1 |
| Menge . . . | 26 | 18 | 3 | 2 | 1 | 0 | 2 |
| Zweifel . . . | 44 | 32 | 8 | 3 | 0 | 1 | 0 |
| Reichel . . . | 1 | 0 | 1 | 0 | 0 | 0 | 0 |
| Wertheim . . . | 15 | 4 | 10 | 1 | 0 | 0 | 0 |
| | 117 | 72 | 32 | 6 | 1 | 1 | 4 |

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These references are enough to show that in the majority of cases of suppuration of the uterine appendages which come under observation the pus is sterile.

The ratio of the sterile cases to those containing organisms differs somewhat in the records of different observers. This should be expected. The operator who meets and operates upon the acute cases is he who most often will find pus containing microörganisms.

Since the recent acute cases, and perhaps the chronic cases during an acute attack, are those in which we are most likely to find pathogenic organisms, we would expect the septic or aseptic character of the pus in any case to be indicated by the symptoms presented by the patient. Hartmann and Morax (*loc. cit.*) state that in their experience the pus was sterile in those cases which were of long standing.

In my own experience the cases in which I have found microörganisms have been those in which decided constitutional and local symptoms were present before the operation. These symptoms were: Pyrexia, coated tongue, rapid pulse, marked pelvic and lower abdominal pain and tenderness; all the symptoms of an active inflammatory process. Schauta (*loc. cit.*) states, however, that we can obtain no knowledge in regard to the character of the pus from the history given by the patient, the pelvic examination, or the temperature. The statistics which he gives seem to show that fever preceding operating is of no significance in regard to the pathogenic or non-pathogenic character of the contents of a pyosalpinx. There were 134 cases under his observation; 112 were afebrile and 22 were febrile. Of the 112 afebrile cases, 88 contained sterile pus or no pus; 15 contained gonococci; 9 contained streptococci or staphylococci. Of the 22 febrile cases, 13 contained sterile pus or no pus; 3 contained gonococci; 5 streptococci or staphylococci; and 1 the bacillus coli communis.

In this connection it should be remembered that the demonstration by the microscope of pathogenic microörganisms does not always prove that the pus is septic; for the micro-

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organisms may be dead or inert. The cases may be divided into three classes: Those containing live, active microörganisms; those containing dead microörganisms; and those containing no microörganisms. The second class represents the stage of transition between the first and the third. The second and third classes alike contain sterile pus. It is not always possible to determine, with the microscope, whether the microorganisms are living or dead.

A fact of practical importance is that microörganisms may be found not only in the pus of a pelvic abscess, but in the substance of the abscess wall. The pus may be free from organisms, while they are present in the wall. The pus may be sterile while the wall is septic.

Boisleux (*Brit. Gyn. Journal*, Part xxxviii.) states that in cases in which the bacteriological examination of the pus revealed no bacteria, he has injected the pus into the peritoneum of the guinea-pig with no result; whereas, inoculation by the abscess wall produced fatal sepsis.

The bacillus coli communis has often been found in the wall of an abscess adherent to the intestine.

Wertheim has found gonococci in the wall of the Fallopian tube. In the Bacteriological Laboratory of the University of Pennsylvania streptococci and staphylococci have been found in the substance of the wall of a tubal abscess. In these positions the microörganisms are probably often dead. Boisleux seems to have shown, however, that they may be actively septic.

The second fact—demonstrated by bacteriology—to which reference has been made is that the microörganisms found in suppuration of the uterine appendages differ markedly in their action upon the peritoneum. In other words, the danger of peritonitis, or of peritoneal sepsis, after intraperitoneal rupture of a tubal abscess is dependent upon the character of the microörganisms found in the pus. The danger may be nothing, or very great.

The pneumococcus seems to be virulent in the peritoneum.

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The gonococcus seems to be of but doubtful danger to the peritoneum.

Bumm, in 1890 (*Ann. de Gyn. et d'Obstét.*, t. xxxiii.), stated that the gonococcus was harmful only to the mucous membrane and died in serous cavities.

Treves (*Lettsomian Lectures*, 1894) says that the gonococcus dies in the peritoneum. The difficulty of reaching a definite conclusion in regard to the danger of the gonococcus arises from the fact that there is often a mixed infection in cases of gonorrhœal pyosalpinx; or that other morbid conditions may be present in the peritoneum which render the gonococcus dangerous.

Schauta believes that the gonococcus may do harm in the peritoneum, though he is unable to offer positive proof of this fact. He reports two cases in which gonococci alone were found in the pus of a pyosalpinx removed by operation; and after death, which resulted from purulent peritonitis, large numbers of gonococci were found in the peritoneal pus. But staphylococci were also found in the peritoneum; and, therefore, the pathogenic influence of the gonococci becomes uncertain. The staphylococci may have gained ingress post-mortem or during the operation. Though these cases, therefore, do not prove that the gonococcus can cause fatal peritonitis, they at least seem to demonstrate the fact that under certain conditions the gonococcus does not die in the peritoneum, but may multiply, and to this extent it is an element of danger.

Pus containing gonococci alone certainly seems to be less virulent in the peritoneum than pus containing some of the other microörganisms. Schauta's statistics show that of 15 cases of unmixed gonorrhœal pyosalpinx—where intraperitoneal rupture of the sac occurred during the operation—2, those just referred to, resulted fatally; and in these 2 there is some doubt in regard to the origin of the infection; while in 8 cases where the pus contained streptococci and staphylococci, in which rupture occurred during operation, 3 resulted fatally.

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Wertheim reports cases of virulent gonorrhœal pyosalpinx in which escape of pus into the peritoneum in no way interfered with recovery after operation. The virulence of the pus was proved by inoculation in the human urethra. The gonococcus has never been found alone in the human peritoneum in a fatal case of peritonitis. Wertheim believes that the gonococci do not infect the surface of the peritoneum, but penetrate to the deeper tissues; and if they were properly sought for in these tissues they would be found. In the present state of our knowledge it can be said that the gonococcus is one of the least dangerous organisms in the peritoneum. Perhaps occurring alone in an uninjured peritoneum it is harmless.

The staphylococcus, streptococcus, and the bacillus coli communis are the organisms which usually cause peritonitis, or peritoneal sepsis.

An interesting table is given by Treves (*loc. cit.*).

Cases of peritonitis in man in which microörganisms were found in the exudation:

| | Fränkel | Tavel and Lantz. | |
|---|---|---|---|
| | Found alone. | Alone. | In association. |
| Bacterium coli commune . . . . . | 11 | 15 | 16 |
| Streptococci . . . . . | 7 | 3 | 15 |
| Staphylococci . . . . . | 1 | 2 | 6 |
| Pneumococci . . . . . | 1 | 0 | 2 |

The bacillus coli communis, as it occurs in the pus of a pelvic or abdominal abscess, seems to be very virulent. It alone is a very frequent cause of fatal peritoneal sepsis. The pyogenic organisms, the streptococcus and the staphylococcus, seem to differ in degree in their action upon the peritoneum. The streptococcus seems to be the more virulent, and is the one more usually found in cases of peritonitis.

Murphy (*Medical News*, January 5, 1895) states that pus in



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which the staphylococcus and the inert bacillus coli communis predominated could be free in the peritoneal cavity for a long time and produce but very slight changes in the peritoneum. And such pus when injected into the peritoneum of animals caused no unpleasant symptoms. When, however, the streptococcus predominated serious peritoneal lesions and sepsis followed.

Peritoneal sepsis depends not only upon the character of the organisms which have entered the peritoneal cavity, but also upon the character of the fluid in the peritoneum and the condition of the serous surface. All investigators agree that the healthy peritoneum has the most extraordinary power of absorption; and that peritonitis is most likely to occur when there has been chemical or mechanical injury to the absorbing serous surface, when a good culture medium remains in the peritoneal cavity.

Extravasations of blood or serum in the peritoneal cavity, long exposure of the peritoneum and damage to the serous surface, all aid the development of peritonitis.

Experiments upon animals (*Pavlowsky-Ebendas*, 1889, Bd. cxvii.; Growitz, *Virchow's Archiv*, 1889, Bd. cxvi.) show that injections of pathogenic organisms into the peritoneal cavity are most virulent if mixed with a culture fluid which is difficult of absorption, or if the peritoneal surface has been injured by some chemical or mechanical irritant.

An important fact in regard to the development of peritonitis is the immunity—natural or acquired—which the peritoneum possesses, in some cases, from infection. This fact has been recognized clinically by abdominal surgeons, and has been demonstrated by experiments upon animals. Several observers have shown (Reichel, *Deut. Zeit. f. Chir.*, Bd. xxx. p. 1) that immunity from peritoneal infection by septic organisms can be produced artificially. A small dose of septic material is introduced into the peritoneal cavity of the dog, and after the animal has recovered from the disturbance produced a larger dose is injected. This process is re-

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peated with increasing amounts of the poison, until such a degree of immunity is acquired that the animal will survive a dose of septic material which in a control-experiment would cause death within twenty-four hours.

The facts determined by bacteriology and by experiments upon animals which I have briefly recorded have a direct practical bearing upon the surgical treatment of abdominal and pelvic diseases.

The subject of drainage after cœliotomy is one which has been discussed so much that I approach it now with hesitation. The phase of the subject, however, which I wish to present is one which has received but little attention, and some consideration of it may serve a useful purpose.

I assume that it will generally be admitted that, though drainage after cœliotomy should be avoided if possible, there are yet some cases in which the chances of recovery are greater with drainage than without it. The difficulty is to determine what cases absolutely require drainage. The chief object of drainage after cœliotomy is to remove from the peritoneum any material which is, or which may become, septic. Blood or other material, suitable for the culture of bacteria, may become septic, excluding operative infection, either from septic organisms existing in the abdomen before operation, or from infection through the intestinal wall after operation.

Infection by organisms existing in the pelvis before operation, part in fact of the pathological process for which the operation is done, is the usual cause of peritoneal sepsis after aseptic cœliotomy for disease of the uterine appendages.

Bacteriology, by demonstrating the sterility of the pus in the majority of the cases of pelvic suppuration which are subjected to operation, has eliminated from the class of drainage cases a large number, in which a few years ago drainage was considered by many operators to be essential.

Though, in a good many cases, we can conclude from the history of the disease and the symptoms presented before the operation that the pus is in all probability sterile, yet we can

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never be positive of this fact without a bacteriological examination. Schauta says that we are unable to determine the septic or the sterile character of the pus from the history or any of the symptoms before operation. The bacteriological examination can be made, in part at least, by the microscope during the operation. The microscope, unlike culture or inoculation, does not demonstrate fully the activity or virulence of the pathogenic organisms seen in the pus. But it does demonstrate their presence; and to that extent it furnishes the operator with knowledge, which is of value in determining the best technique to follow in any case.

Schauta adopts the following plan of operation:

If the tubal abscess be small an attempt is made to remove it entire—without rupture. If, however, the abscess should rupture during removal, the pus is immediately examined, and if it be sterile or contain gonococci the abdomen is closed without drainage. If streptococci are found the field of operation is drained through the abdominal wound by means of iodoform gauze.

In the case of a large pelvic abscess which can be brought to the abdominal incision a somewhat different technique is followed. The parietal peritoneum is sutured at a suitable position to the anterior surface of the abscess, and the rest of the abdominal incision is closed with sutures, a drop of pus is then withdrawn by means of a fine trocar, and a cover-glass preparation is immediately made. If the pus is found to be sterile or to contain gonococci, the abscess is opened and washed out, and the abdomen is reopened and the sac completely removed. If, however, the pus contains streptococci or staphylococci, the operation is discontinued. After the lapse of a few days, when the parietal peritoneum has formed adhesions to the abscess wall, the sac is incised and drained.

The objection to the latter part of the technique just described is that the disease in many cases is not cured by mere incision and drainage of the abscess. Incision of an abscess, which has as its origin a pyosalpinx, does not cure the disease.

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Therefore it seems to me best in every instance to remove the whole of the abscess wall—first aspirating if the cavity be large—and, in case the contents be septic, to trust to sponging, washing, and drainage to avoid peritoneal infection.

In most of the cases of suppuration of the uterine appendages on which I have operated since October, 1893, bacteriological examination of the pus has been made during the operation whenever intraperitoneal rupture of the abscess took place; and the necessity for washing and drainage has been determined by this examination.

If the abscess can be removed without rupture, drainage is unnecessary. If rupture occurs and the contents are sterile, the pus is merely sponged out and the abdomen is closed. If rupture occurs and the contents are septic, the pelvis is washed with distilled water, or sometimes with a 1 : 2000 bichloride solution, and is drained with the glass tube or with gauze. I have also made similar bacteriological examination in all cases of ovarian and tubal tumors where there was doubt about the sterility of the contents.

The cases may be tabulated as follows:

| Case. | No organism. | Streptococci. | Staphylococci. | Gonococci. | Bacillus coli communis | Mixed organisms, bacilli and cocci. |
|---|---|---|---|---|---|---|
| 1 | 1 | | | | | |
| 2 | 1 | | | | | |
| 3 | 1 | | | | | |
| 4 | 1 | | | | | |
| 5 | ... | 1 | 1 | | | |
| 6 | 1 | | | | | |
| 7 | 1 | | | | | |
| 8 | 1 | | | | | |
| 9 | ... | 1 | 1 | ... | ... | Short bacilli, diplococci, and a short bacillus resembling coli commune. |
| 10 | 1 | | | | | |
| 11 | 1 | | | | | |
| 12 | 1 | | | | | |
| 13 | ... | 1 | 1 | | | |
| 14 | ... | ... | ... | 1 | | |
| 15 | ... | 1 | 1 | ... | 1 | Diplococci, tubercle bacilli, a long bacillus. |
| 16 | 1 | | | | | |
| 16 | 11 | 4 | 4 | 1 | 1 | |

All of the women recovered from the operation. In none were there any symptoms whatever of general peritonitis or

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of peritoneal sepsis. There was, however, a marked difference in some cases in the local condition—the condition of the pelvis and incision—and this difference seemed to be, without doubt, dependent upon the character of the organisms found in the pus. The sterile cases recovered easily without inflammation or suppuration at any point. In two of the cases, however, in which streptococci were found there followed operation suppuration of the incision, stitch-hole abscesses, suppuration in the tube-track, and fecal fistula—phenomena which emphasized the fact that it was the drainage which prevented peritoneal sepsis. That these conditions were not caused by infection at the operation or through the tube is rendered probable by the fact that a similar combination of accidents never occurred in my experience in any case in which drainage was used for other than suppurative disease.

At present I use drainage whenever any pathogenic organisms are found; though there seems to be no doubt that the gonococcus and staphylococcus are less dangerous than the streptococcus and the bacillus coli communis. The bacillus coli communis demands drainage not only on account of the intrinsic virulence of the organism, but also because its presence proves an intestinal lesion which itself requires drainage.

I feel confident that, in following this method, I use drainage more often than is necessary; and that future experience will enable me to restrict still further the drainage cases. Those cases which contain the gonococcus alone, or a few staphylococci, in all probability require no drainage; and there are some cases in which the organisms seen are dead, and consequently the pus sterile, though the microscope does not show this.

The examinations have been made for me by Dr. Beyea. Cover-glass preparations are made and are fixed in the flame of an alcohol lamp, and stained with carbol-fuchsin. A Leitz 1/12 immersion lens is used.

The following cases—some of which have already been published—serve to illustrate this subject. The plate shows

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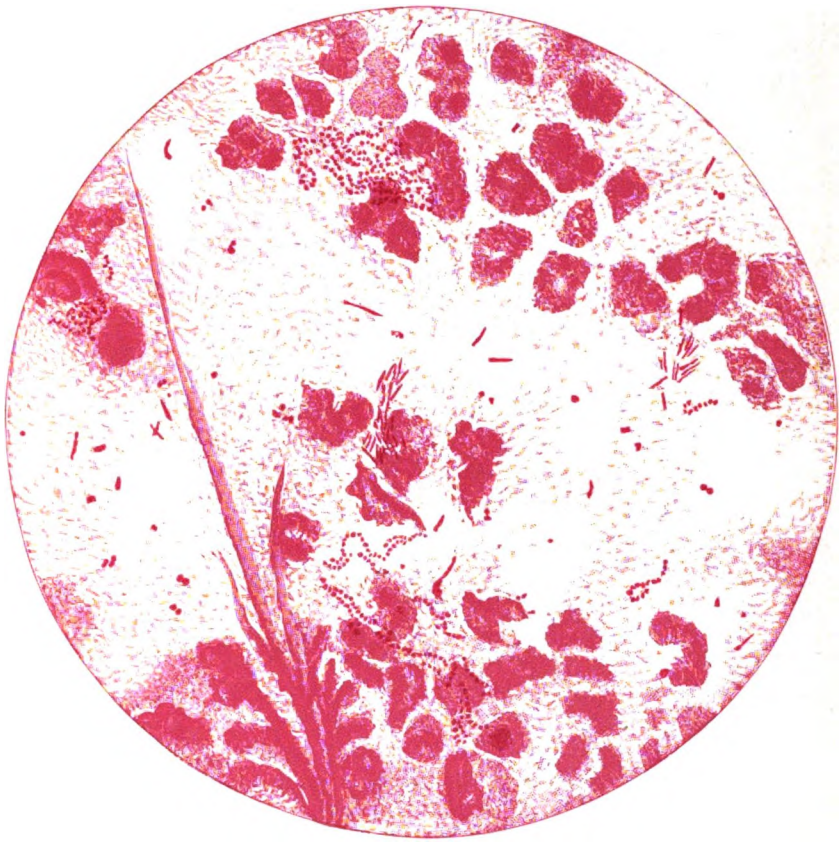

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the microscopical appearance of a drop of pus examined during the operation in Case V.:

CASE I. *Tubo-ovarian abscess with sterile contents and chronic endometritis.*—This woman had had septic infection after a miscarriage several years ago, and had since then suffered continuously with bilateral ovarian pain. Cœliotomy was performed, and the appendages were removed on both sides and the uterus amputated at the internal os. During the enucleation a tubo-ovarian abscess, the size of a turkey egg, was ruptured on the right side, and the purulent contents escaped into the pelvis and were removed with gauze pads. The contents were immediately examined and pronounced sterile. The abdominal incision was closed without irrigation and without drainage. Convalescence was easy. There was no elevation of temperature and the woman has continued well.

CASE II. *Tubo-ovarian abscess and abscess of broad ligament, with septic contents.*—This woman had septic infection following a miscarriage one year ago, and since then had suffered with repeated attacks of pelvic peritonitis. Cœliotomy was performed during one of these attacks. All the pelvic contents were found matted together by inflammatory adhesions, and the thickened omentum was adherent transversely across the pelvis. Both tubes and ovaries were removed and the uterus was amputated at the internal os. An abscess cavity on the left side containing several ounces of pus involved the tube, ovary, and cellular tissue of the broad ligament. This abscess was ruptured and the pus filled the pelvis. It was examined and found to contain streptococci. The pelvis and lower abdomen were thoroughly washed out with warm water and drained with the glass tube. The woman had a slow, difficult convalescence, having a profuse discharge of pus from the drainage-tube, and after the first week a discharge of feces, the result of intestinal necrosis.

CASE III. *Tubo-ovarian abscess with sterile contents.*—The trouble in this case seemed to date from a labor nine years before. When cœliotomy was performed a tubo-ovarian abscess, containing about one ounce of pus, was found on the right side and a chronically inflamed, closed tube and ovary on the left.

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Both appendages were removed, the abscess being ruptured during enucleation. The contents were immediately examined and pronounced sterile. The abdomen was closed without irrigation or drainage. Convalescence was very easy.

CASE IV. *Double pyosalpinx, tubo-ovarian abscess, with septic contents; endometritis.*—This woman had had septic infection following a miscarriage five years before. She had a tubercular family history and was suffering herself with pulmonary tuberculosis. She had had frequent attacks of pelvic peritonitis, during the last of which, following a criminal abortion, she was operated upon. All the pelvic contents were matted together by adhesions, old and recent; a tubo-ovarian abscess, the size of a child's head, filled the left and posterior portion of the pelvis, reaching half-way between the umbilicus and the symphysis pubis. The tubes, ovaries, and the uterus to the internal os were removed. The abscess cavity was ruptured and the pelvis and lower abdomen were deluged with pus. Bacteriological examination was immediately made and a small number of streptococci were found. The pelvis was washed out thoroughly with warm water and drained with a glass tube. Convalescence was remarkably easy. The tube was removed in forty-eight hours and the tube-tract was completely closed within a week.

CASE V. *Tubo-ovarian abscess with septic contents.*—This woman had an acute attack of salpingitis following a miscarriage eight months before. Two weeks before the operation of cœliotomy the uterus had been curetted with the result of producing an acute suppuration of the left tube and ovary.

When the abdomen was opened a tubo-ovarian abscess, about the size of an orange, was found on the left side. The abscess was ruptured during the enucleation and pus escaped into the pelvis. Bacteriological examination showed large numbers of streptococci. The pelvis was washed with a 1 : 2000 solution of bichloride, and drained with the glass tube. Convalescence was very easy.

CASE VI. *Tubercular pelvic abscess with septic contents.*—This woman was twenty-seven years old and had never been pregnant. She gave a history of having had an attack of peritonitis three years ago which confined her to bed for nine weeks. She had

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been in bed with what she considered a similar attack for four months before operation.

When the abdomen was opened a large abscess cavity was found filling the pelvis and extending half-way between the symphysis and umbilicus. The purulent accumulation was roofed by intestines, there being no defined abscess wall. A large quantity of very offensive pus escaped into the general peritoneal cavity. The pus was examined and found to contain streptococci and the bacillus coli communis. The tubes—pyosalpinx—and the ovaries were removed and the whole pelvis and lower abdomen were thoroughly washed out with hot water and drained with a glass tube. More careful microscopical examination showed the abscess to be tubercular. A fecal fistula developed on the third day. The convalescence has been very tedious on account of the extremely poor condition of the woman and the tubercular character of the disease.

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Wm. Goodell, M.D.

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# IN MEMORIAM.

## WILLIAM GOODELL, M.D.,

PHILADELPHIA.

By Barton Cooke Hirst, M.D.,
*Philadelphia.*

The announcement of the death of William Goodell brought a sense of personal loss to a greater number of physicians, perhaps, than would the death of any other member of the profession in America. Dr. Goodell had hundreds of personal friends and admirers in all parts of the country, and there were thousands more who looked for his medical papers with interest and accepted his advice without question. His position in American gynecology was unique. He was one of the small group of pioneers who made the gynecology of this country what it is, and he alone among these men possessed the literary faculty to a high degree. Had he chosen he could have made his name famous by literary work pure and simple. He had but one equal in this respect among English-speaking physicians, the late Oliver Wendell Holmes. Consequently he was able to present the advances of the new science and art of gynecology in a manner that chained the attention of every reader. Moreover, his work bore such evident marks of keen perception, sound judgment, and a judicial fairness of mind, that what he wrote was not only read with interest and pleasure on account of its pure and attractive style, but it

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moulded the thought and shaped the practice of an astonishing number of followers. A personal acquaintance with Dr. Goodell strengthened the liking and respect which his writings always inspired. His kindness and courtesy to younger men made him many a devoted friend. His instant and enthusiastic response to every worthy appeal for aid could be confidently expected. His presence united a simple kindliness of manner with an innate dignity that could scarcely fail to impress the most indifferent observer.

Highly gifted by Nature with a powerful mind, a keen wit, and the power of expression, Dr. Goodell never presumed upon his natural advantages. His work of all kinds was of the most painstaking and methodical character. His case-book was a model of comprehensive and careful note-taking, and his literary work, in which he should have been conscious of masterly ability, was not regarded as completed until every sentence was read and re-read and written and re-written.

The main events of Dr. Goodell's life are tolerably familiar to the Fellows of the Society. He was born in Malta, the son of a missionary. He received his collegiate and medical education in this country, and began his medical career in Constantinople. He returned to this country after a few years, and settled in West Chester as a general physician. So unsatisfactory was his progress, however, that he determined to emigrate to the West. His books and furniture were actually packed and addressed to a small town in Kansas, when, in 1865, he received the appointment to the Preston Retreat. Here he found congenial work amid favorable surroundings. During the twenty years of his residency he acquired a leading position in his branch of medicine, and this position he maintained until failing health last summer forced him to retire from active work. His strength failed steadily, and he died on the 27th of October, 1894, in the sixty-fifth year of his age. He was appointed Lecturer on Obstetrics and Diseases of Women in the University of Pennsylvania in 1870, and in 1874 Clinical Professor of the Diseases of Women and Children.

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In this capacity he taught gynecology for twenty years to the large medical classes of the University of Pennsylvania. On his resignation he was made Honorary Professor of Gynecology.

Dr. Goodell united in his professional career two distinct phases of development, with either one of which an ambitious man might well have been content. His greater distinction and stronger claim for remembrance as long as medicine has a literature will be, in the writer's judgment, his achievements as a student and writer. He has told me that the happiest hours of his professional life were spent in the library of the College of Physicians, that the spare time of six months out of a year would be devoted to research upon a single subject; and that many leisure hours were spent in desultory reading of quaint old tomes in the library, for the mere love of the "quiet serenity of books." It was in such a mood that he chanced upon Louyse Bourgeois's book one day, and to this happy accident we owe the most charming bit of writing that enlivens the often dull and monotonous pages of medical literature. One is reminded of the contrast between Lowell's consular reports and the vast collection of unnoticed productions that lie undisturbed in the State Department. With this sketch Dr. Goodell himself was greatly pleased, and he never ceased to be gratified at the evidence that came to him as long as he lived that it was appreciated and valued, not only by medical men, but by the literary world at large. He believed this work, I think, along with a review of a gynecology written early in his literary career, to be his best productions. A fact to which Dr. Goodell was fond of referring, and of holding up half playfully as an example to his younger friends, was that his first medical article was written when he was forty years of age. So well was he prepared for his first literary venture by personal experience and by profound research, that his paper on "Accidental Hemorrhage" remains the best upon that subject to this day.

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In the ten years succeeding, some forty publications appeared, in great part upon obstetrical subjects, for it was only in the last fifteen years of his life, or after 1879, that Dr. Goodell devoted his entire attention to gynecology.

As a practical gynecologist Dr. Goodell's chief claim to distinction lay in his wide and well-digested experience, his good judgment, and his powers of diagnosis. He was not as facile nor as successful an operator as some of the younger men who grew up about him, but his advice and treatment, tempered by a calm, judicial quality of mind, and not prompted by a desire to operate, secured results for his patients certainly not excelled by those of any of his associates. It was an appreciation of this fact by physicians, and by the laity, that secured and kept for Dr. Goodell by far the largest gynecological practice in Philadelphia.

It was the writer's good fortune to be connected with Dr. Goodell as student, assistant, and associate for fourteen years. In the beginning of this period he had practically no rival in his immediate neighborhood. He had established a school of treatment and of operative technique which was followed without question in the large medical circle which he influenced. It might easily be forgiven such a man if he clung to methods which he had founded, to which he was accustomed, and from which he had obtained success; but his operative technique and his methods of treatment kept progress year by year with the development of gynecology, and in the last year of his active life the most progressive and radical of the younger school could have found little to criticise in his operative and therapeutical technique.

In Dr. Goodell's untimely death, for he should still have had years of usefulness before him, there must be many Fellows of this Society who, like myself, mourn not only the disappearance of a distinguished figure from American medicine, whose place cannot be adequately filled, but also the loss at the same time of a dear friend, a wise teacher, and a safe leader.

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Appended is a list of Dr. Goodell's positions and of his chief literary productions:

One of the founders and President of the Philadelphia Obstetrical Society, and of the American Gynecological Society; Honorary Fellow of the Edinburgh Obstetrical Society; Corresponding Fellow of the London Obstetrical Society; Honorary Fellow of the Imperial Medical Society of Constantinople; Fellow of the College of Physicians of Philadelphia, and member of other local and State societies; Professor and Honorary Professor of Gynecology in the University of Pennsylvania.

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